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OMB No. 0704-0188

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1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE August 1995	3. REPORT TYPE AND DATES COVERED Cost & Training Effectiveness Analysis
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4. TITLE AND SUBTITLE Heavy Assault Bridge Cost & Training Effectiveness (CTEA), Final Report	5. FUNDING NUMBERS None-in-house action
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6. AUTHOR(S) Mr. David K. Carroll, Jr.	
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7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Commandant U.S. ARMY ENGINEER SCHOOL ATTN: ATSE-TD-TA-N FORT LEONARD WOOD, MO 65473-6600	8. PERFORMING ORGANIZATION REPORT NUMBER  USAES-CTEA-95-HAB-001
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9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)  Same as item #7	10. SPONSORING/MONITORING AGENCY REPORT NUMBER  Same as item #8
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11. SUPPLEMENTARY NOTES Prepared in-house with guidance and assistance from TRAC-WSMR
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12a. DISTRIBUTION/AVAILABILITY STATEMENT  <div style="border: 1px solid black; padding: 5px; text-align: center;"> <b>DISTRIBUTION STATEMENT A</b>  Approved for public release;  Distribution Unlimited </div>	12b. DISTRIBUTION CODE
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13. ABSTRACT (Maximum 200 words)  This initial analysis is to determine the most training and cost effective method of teaching the skills and knowledges required for operation of the Heavy Assault Bridge (HAB) (common name: Wolverine). The analysis was completed as a requirement for Life Cycle System Management Model (LCSMM) Milestone III. The analysis is based on MOS 12F, and a fielding of 106 vehicles. The analysis will be updated as the program develops and additional information is generated.
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19960809 135

14. SUBJECT TERMS CTEA, HAB, Heavy Assault Bridge, Wolverine, Training Analysis, Cost Analysis, Simulator Costs, Engineer School, MOS 12F			15. NUMBER OF PAGES 140
			16. PRICE CODE
17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT

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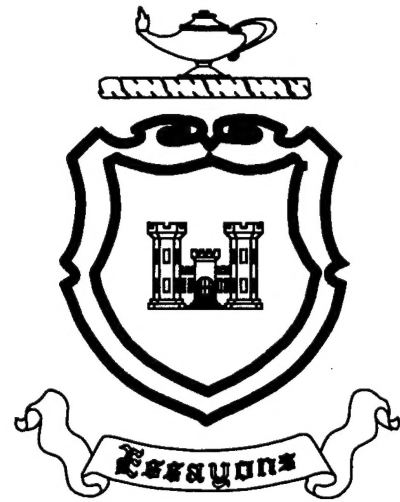
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**USAES-CTEA-95-HAB-001**

# **Heavy Assault Bridge Cost and Training Effectiveness Analysis (CTEA)**



David K. Carroll Jr.

## **Final Report**

DEPARTMENT OF THE ARMY

August 1995

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TRAC-WSMR

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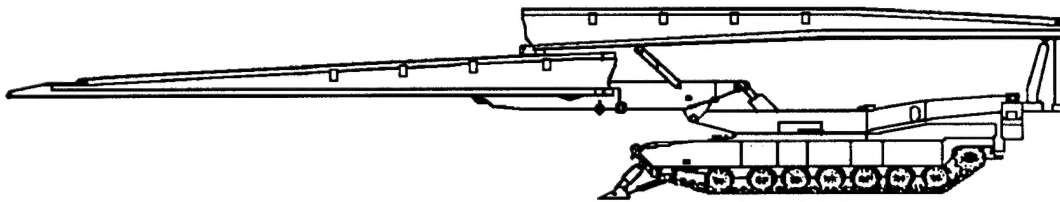
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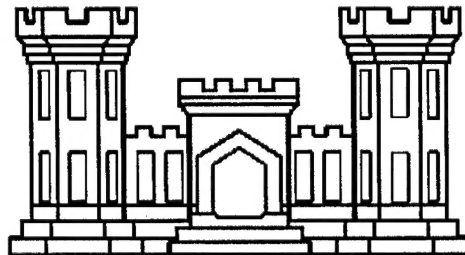
# **HEAVY ASSAULT BRIDGE (WOLVERINE)**

## **Cost and Training Effectiveness Analysis (CTEA)**



**APPROVED**

**Final Report**



**United States Army Engineer School  
Fort Leonard Wood, MO 65473-6650**

August 01, 1995





## DEPARTMENT OF THE ARMY

UNITED STATES ARMY ENGINEER SCHOOL  
FORT LEONARD WOOD, MISSOURI 65473-6600



REPLY TO  
ATTENTION OF

16 MAY 1995

ATSE-T-PD-NE (70)

MEMORANDUM THRU Commander, TRADOC System Manager, Combat Mobility  
Division, ATTN: TSM-CMD (COL Ferguson),  
Fort Leonard Wood, MO 65473-5000

FOR Commander, Program Executive Office, Armored Systems  
Modernization, ATTN: SFAE-ASM-CV, Warren, MI 48397-5000

SUBJECT: Heavy Assault Bridge (WOLVERINE) Cost and Training  
Effectiveness Analysis (CTEA)

1. As a result of my review of the CTEA, I am providing the following guidance: based on the limited resources and pay back years, proceed with the recommended alternative three, field five WOLVERINE simulators with six WOLVERINE systems provided for institutional training support. This is based on an assumption of fielding 106 WOLVERINES with MOS 12F as the operator.

2. The impending 12B 12F consolidation may require additional simulators and vehicles for training. The final requirement will be determined by a follow-on AR 5-5 study to update both the WOLVERINE and GRIZZLY CTEAs.

3. The intent of this memorandum is to validate the above decision, and enable this endorsement to be an enclosure to the Engineer School Approved CTEA.

4. POC for this action is Mr. David Carroll, DSN 676-7653 or commercial (314) 596-0131, ext 3-7653.

JOE N. BALLARD  
Major General, U.S. Army  
Commandant



Center for Excellence

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The point of contact (POC) for this CTEA is the Commander, United States Army Engineer School (USAES), ATTN: ATSE-TD-TA-N (Mr. David Carroll), Fort Leonard Wood, MO 65473-6650

## Acronym and Abbreviation List

\$M	dollars in millions
AIT	advanced individual training
ALT	alternative
APPROP	appropriate
ATCCS	Army Tactical Command and Control System
AVLB	armored vehicle-launched bridge
BASOP	base operation
BCE	baseline cost estimate
BNCOC	Basic Noncommissioned Officer Course
C	constant (as in FY96C Dollars)
C	conference (classroom training)
CAT	combined-arms training
CATS	combined-arms training strategy
CEOI	communications-electronics operating instructions
CER	cost estimating relationships
CLS	classes
CTEA	cost and training effectiveness analysis
CUM	cumulative
DEM	demonstration
DCSRM	Deputy Chief of Staff for Resource Management
E1	examination equipment based
E3	examination equipment based
FY	fiscal year
HAB	heavy assault bridge
HRS	hours
INST	institution
IVIS	Intra Vehicle Information System
JINTACCS	Joint Interoperability of Tactical Command and Control System
LCCE	life-cycle cost estimate
LOTUS	name of the spreadsheet program used
(M)	million
MCA	military construction, Army
MI	mile
MIL	military
MLC	military load class
MOS	military occupational specialty
MPA	military personnel, Army
MTR PRK	motor park
N/C	no change
NBC	nuclear, biological, chemical
NO	number
OMA	operations and maintenance, Army

OPTEMPO	operating tempo
PE1	practical exercise equipment based
PM	program manager
PMCS	preventative maintenance checks and services
POC	point of contact
POE	program office estimate (BCE name change)
POI	program of instruction
ROM	rough order of magnitude
S/W	software
SIM	simulator(s)
SINGARS	single-channel ground-to-air radio system
SME	subject-matter expert
SOI	signal operation instructions
STRICOM	Simulation Training and Instrumentation Command
SUSMT	sustainment
T/S	train to standard
TACOM	Tank and Automotive Command
TADSS	training aids, devices, simulators, and simulations
TRAC-WSMR	TRADOC Analysis Center, White Sands Missile Range
TRADOC	United States Army Doctrine and Training Command
UIT	unit initial training
USAES	United States Army Engineer School
VEH	vehicle
YR	year

## **Executive Summary**

**BACKGROUND:** Due to the fielding of the M1 series of combat tanks and the requirement for a longer assault bridge, a new launcher and bridge is required. It was determined that the new system (WOLVERINE) will use the same chassis as the supported force and employ a 24-meter, direct-launch bridge, with a military load class (MLC) 70.

### **OBJECTIVES:**

Objective 1. Identify, from the Breacher CTEA, the relevant tasks that directly transfer to the WOLVERINE, and identify the bridging-specific tasks.

Objective 2. Identify the training methods and resources required to train the identified tasks.

Objective 3. Determine the potential training-problem issues related to fielding the WOLVERINE.

Objective 4. Develop training alternatives to teach the selected tasks, and address the potential training problems.

Objective 5. Estimate the cost for each training alternative.

Objective 6. Provide the results of the analysis to the USAES for selection of the appropriate training alternative.

**METHODOLOGY:** The study analysis was specifically designed to generate results which were used to develop the following training alternatives. These alternatives were then used to identify or estimate training-program costs.

Alternative 1: Institutional training using priority 1 training aids, devices, simulators, and simulations (TADSS) with 6 WOLVERINEs and unit sustainment/combined-arms training (CAT) without simulation.

Alternative 2: Institutional training using priority 1 and 2 TADSS with 6 WOLVERINEs and unit sustainment/CAT without simulation.

- Alternative 3: Institutional training using priority 1, 2, and 3 TADSS with 6 WOLVERINEs and unit sustainment/CAT without simulation.
- Alternative 4: Institutional training without simulation with 12 WOLVERINEs and unit sustainment/CAT without simulation.
- Alternative 5: Limited institutional familiarization with 2 WOLVERINEs and unit training and sustainment without simulators or simulation.

## **FINDINGS:**

### **Effectiveness Analysis:**

- One hundred and thirty-four of the Breacher tasks are applicable to the WOLVERINE with little or no modification, and four tasks are WOLVERINE-specific.
- There is no need to select special training methods or media since there is little or no difference between 12F and consolidated 12B soldiers.
- Hands-on training represents the majority of current unit task training in garrison or in a field environment.
- Traditional classroom instruction, in combination with hands-on training in garrison or in the field, is the second most common training method currently used to train WOLVERINE-related tasks.
- CAT exercises by themselves or in combination with hands-on training is considered to be effective training.
- Training limits, due to the lack of funds, personnel cuts, and maintenance problems, were cited as the factors that had a direct impact on a unit's ability to accomplish sustainment training, training to standard, and new-equipment training.
- Downtime, due to inadequate vehicle and equipment maintenance, was the primary reason for limited hands-on training.
- Easier, less expensive maintenance was cited as the key to providing significant training improvements.

- The Breacher Survey responses indicate that the tasks applicable to WOLVERINE training, in almost all cases, should include some form of hands-on instruction.
- USAES instructors chose the "classroom/demonstration/hands-on" combination, based on the Breacher survey, as the top preference for training on almost all WOLVERINE tasks.
- USAES instructors had little confidence in recommending the use of simulator training or an obstacle range for any category of tasks based on the Breacher Survey. The overall consensus was that any deviation from the current training methods will require a significant reeducation of instructors before implementation.
- Additional training is required on nuclear, biological, chemical (NBC); tactical operations; and almost all communication tasks.

### **Cost Analysis:**

- The following conclusions were reached based on the training strategies, program of instruction (POI), TADSS, life-cycle cost estimate (LCCE), and the WOLVERINE program office estimate (POE).
- The WOLVERINE simulator will reduce operating tempo (OPTEMPO) costs significantly for the given POIs.
- Total class vehicle miles are reduced significantly when using simulators in training.
- The training alternatives are ranked from the least expensive to the most expensive in FY96 constant dollars based on the total training costs (institution and unit).

Simulation-Based Training (Alternative 3)	\$595.4 (M)
Vehicle-Based Unit Training (Alternative 5)	\$759.3 (M)
Vehicle-Based Institutional Training (Alternative 4)	\$1,559.4 (M)

- The most costly simulator provides the lowest cost training alternative.



- The savings from reduced OPTEMPO for simulation-based training will pay the entire LCCE for simulation-based training in about 17 years from the start of the program (FY96).
- The most costly alternative requires the greatest number of WOLVERINEs at the institution.

# **Heavy Assault Bridge (WOLVERINE) Cost and Training Effectiveness Analysis (CTEA)**

## **Chapter 1. Introduction**

**PURPOSE:** The purpose of this study was to determine the type of training required for soldiers to operate the WOLVERINE, evaluate current military occupational specialty (MOS) 12F training used to operate the armored vehicle-launched bridge (AVLB), and determine how much of this training can be applied in developing the WOLVERINE training program.

**BACKGROUND:** Due to the fielding of the M1 series of combat tanks and the requirement for a longer assault bridge, a new launcher and bridge is required. It was determined that the new system (WOLVERINE) will use the same chassis as the supported force and employ a 24-meter, direct-launch bridge, with an MLC 70.

**PROBLEM:** The introduction of the WOLVERINE as an engineer asset requires that a review of current engineer training strategies and associated costs be conducted before the USAES develops and implements a WOLVERINE training program.

### **OBJECTIVES:**

1. Identify, from the Breacher CTEA, the relevant tasks that directly transfer to the WOLVERINE, and identify the bridging-specific tasks.
2. Identify the training methods and resources required to train the identified tasks.
3. Determine the potential training-problem issues related to fielding the WOLVERINE.
4. Develop training alternatives to teach the selected tasks, and address the potential training problems.
5. Estimate the cost of each training alternative.
6. Provide the results of the analysis to the USAES for selection of the appropriate training alternative.

**SCOPE:** This CTEA was conducted in support of the WOLVERINE Development and Acquisition Program. This analysis addresses only those tasks that relate to vehicle operation, operator maintenance, and the Basic Noncommissioned Officer Course (BNCOC).

**LIMITATIONS:**

- The effectiveness of training alternatives could not be determined at the time of this analysis since no operator testing had been conducted on a WOLVERINE.
- The study does not address maintenance training above operator level.
- The study does not specifically address WOLVERINE-related, engineer-officer tasks or training recommendations.

**GROUND RULES AND ASSUMPTIONS:**

- The number of heavy assault bridges (HABs) (WOLVERINE) to be fielded is 106.
- Class size for initial training is 12 students, 50 classes per year; BNCOC is 12 students, 5 classes per year.
- All WOLVERINES will be in operational units or in the training base (no maintenance floats or war stock).
- Initial training will consist of 80 hours; BNCOC training will consist of 16 hours.
- Unit OPTEMPO costs are based on 680 miles per vehicle per year.
- Initial training-vehicle operation costs are based on 15 miles per hour of moving-vehicle training (driving, launching, and so forth).
- WOLVERINE operational costs are based on a per mile cost of \$145 (FY96)—provided by HAB Program Manager (PM).
- The WOLVERINE training-vehicle purchase price is \$4,231,200 (FY96) per vehicle—provided by HAB PM.
- Simulator costs are rough order of magnitude (ROM) estimates for HAB simulation (FY95)—provided by Simulation Training and Instrumentation Command (STRICOM).

- The preferred training method and the future training-method portion of this analysis were developed using the Breacher CTEA—completed by the United States Army Doctrine and Training Command (TRADOC) Analysis Center, White Sands Missile Range (TRAC-WSMR), dated April 94. Only those tasks that are relevant to the WOLVERINE were used. All tasks that were changed or data that was used in a different manner is explained in a rational statement.
- The WOLVERINE will use the same maintenance and classroom facilities as the Breacher; additional military construction, Army (MCA) requirements are listed as part of the simulator costs.
- All costs are expressed in FY96 constant dollars using the inflation factors—provided by TRAC-WSMR.
- All costs before FY95 are considered lost and not included in this analysis.

## **Chapter 2.**

### **Training-Effectiveness Analysis**

#### **APPROACH:**

- The study analysis was derived from the Breacher CTEA with the addition of the bridging-specific tasks. The training alternatives were developed to estimate the training-program costs.
- The selected tasks and training alternatives were then reviewed by 12F subject-matter experts (SME) for completeness and acceptability.
- The training data used in this analysis was extracted from the Breacher CTEA.
- No independent personnel profiles of MOS 12F soldiers were accomplished. The soldiers identified in the Breacher CTEA are of the same MOS and skill levels as those required to operate the WOLVERINE.
- The training methods and resources needed to train personnel in WOLVERINE tasks were identified for each training alternative developed by the USAES.
- The traditional training methods are the same as those identified in the Breacher CTEA.
- TADSS has been identified as a full-motion simulator with two student training positions and will train the selected tasks to standard. Three levels of simulators have been identified based on the number of tasks or task fidelity incorporated. These simulators are identified as WOLVERINE simulator priority 1; WOLVERINE simulator priority 1 and 2; and WOLVERINE simulator priority 1, 2, and 3. An explanation of the tasks included in each simulator is listed in Appendix D.

#### **RESULTS:**

Objective 1: Identify, from the Breacher CTEA, the relevant tasks that directly transfer to the WOLVERINE, and identify the bridging-specific tasks.

A total of 137 tasks that need to be accomplished to fully and successfully operate the WOLVERINE were identified. Of these tasks, 133 were directly extracted from the Breacher CTEA, and 4 were developed by 12F SMEs using the task data derived from functionally similar Breacher tasks (the rationale for each task is listed in Appendix B). Use of the current M1-chassis configuration hinders including embedded training as an option for the WOLVERINE at this time. The task list was then reviewed by

12F SMEs. Recommended changes were discussed and accommodated until all concurred with the task list.

Objective 2: Identify the training methods and resources required to train the identified tasks.

The current and future training methods for the Breacher tasks that directly transfer to the WOLVERINE are listed in Appendix C. Identification of the total resources that are required to train the WOLVERINE will be accomplished after a training alternative is selected and is part of the course development process.

Objective 3: Determine the potential training-problem issues related to fielding the WOLVERINE.

Potential training problems were extracted from the Breacher CTEA. The problems that were addressed were personnel cuts, reduction in training funds, training land, and maintenance. The potential training problems are listed in Chapter 4.

Objective 4: Develop training alternatives to teach the selected tasks, and address the potential training problems.

Three basic overall training methods were developed: institutional training with simulation, institutional training without simulation, and institutional familiarization and unit initial training (UIT) without simulation. These training methods were then refined into the following five training alternatives. Each training alternative is described in Appendix D.

- Alternative 1: Institutional training using priority 1 TADSS with 6 WOLVERINES and unit sustainment/CAT without simulation.
- Alternative 2: Institutional training using priority 1 and 2 TADSS with 6 WOLVERINES and unit sustainment/CAT without simulation.
- Alternative 3: Institutional training using priority 1, 2, and 3 TADSS with 6 WOLVERINES and unit sustainment/CAT without simulation.
- Alternative 4: Institutional training without simulation with 12 WOLVERINES and unit sustainment/CAT without simulation.
- Alternative 5: Limited institutional familiarization with 2 WOLVERINES and unit training and sustainment without simulators or simulation.

## **Chapter 3. Cost Analysis**

Objective 5: Estimate the cost of each training alternative.

**PURPOSE:** The purpose of the cost analysis was to determine the cost of the USAES-developed-WOLVERINE training strategies. The cost analysis evaluated both institutional and unit training resources necessary to support the 106 WOLVERINE systems. There are three different types of WOLVERINE training resources examined in this study: (1) TADSS, (2) WOLVERINEs designated for institutional training, and (3) WOLVERINEs designated for unit training and CAT.

### **GROUND RULES AND ASSUMPTIONS:**

- All costs are expressed in FY96 constant dollars.
- Costs incurred before FY95 are lost. Cost incurred during FY96 and after are the bases for the analysis.
- AVLB training facilities and equipment are inherited assets.
- No additional range area is required to train the WOLVERINE based on the proposed Breacher/HAB driver's course.
- The resource impacts are those required during the steady-state period of the training program. The periods encompassing the phase in of new training resources and the phaseout of existing training resources are not addressed.
- The class sizes and annual student loads are identical for each alternative for the institutional training courses.
- The TADSS costs are ROM estimates.
- This analysis is based on a total of 106 WOLVERINEs. The number of WOLVERINEs allocated to the training base (institution) is subtracted from the total WOLVERINE fleet and has no impact on the acquisition quantity.
- A 20-year useful life cycle was assumed for the WOLVERINE and the WOLVERINE simulator.
- WOLVERINE simulators are used at the institution only. No simulation is identified for unit training.

MCA funding for the simulator is assumed for FY98. One simulator will be delivered in FY99 and two simulators will be delivered in FY00 and FY01.

**TADSS DESCRIPTION:** The WOLVERINE simulator is comprised of two student stations or crew cabs, two instructor stations, and one image generator.

**TRAINING ALTERNATIVES:** The training alternatives, referred to on page 5, are further defined in Table 1. Each of the five alternatives assumes the same 80 hours of training to fully qualify the 12F soldier to operate and maintain the WOLVERINE. The training alternatives differ by the type of training conducted at the institution and the units. At the institution, there are two types of training: train to standard (T/S) (training to meet standard requirements for the 12F MOS and limited training (training to provide brief familiarization with the WOLVERINE system). At the unit, there are three types of training: sustainment, which is ongoing training to maintain the level of proficiency gained from previous training such as that received at the institution; CAT or training with other units (including combat units) at various organizational levels; and UIT.

Table 1. WOLVERINE training alternatives					
	Institutional Training			Unit Training	
Alt No	Type of Training	No of TADSS	No of WOLVERINEs	Type of Training	No of WOLVERINEs
1	T/S	5	6	SUSMT CAT	100
2	T/S	5	6	SUSMT CAT	100
3	T/S	5	6	SUSMT CAT	100
4	T/S	None	12	SUSMT CAT	94
5	Limited	None	2	UIT SUSMT CAT	104



**METHODOLOGY:** The following describes the analysis performed and the cost methodology used to determine the relative costs for each alternative.

**Data Sources:** The primary sources for this analysis were the following:

- Breacher Cost and Training Effectiveness Analysis (TRAC-WSMR-CTEA-93-019-1/2), dated April 1994, was provided by the Director, TRADOC Analysis Center, White Sands Missile Range.
- Heavy Assault Bridge Simulator, Rough Order of Magnitude, Life-Cycle Cost Estimate (LCCE), dated 25 April 1994, was provided by the Simulation, Training, and Instrumentation Command. (The ROM cost figures for simulator operation were modified to reflect developmental changes in the training strategies).
- WOLVERINE Procurement Cost was provided by the HAB Product Manager, Tank and Automotive Command (TACOM).
- WOLVERINE Operating Cost/Mile was provided by the HAB Product Manager, TACOM.

**Cost-Analysis Approach:**

The approach of the cost analysis was to define the training resource requirements for a given alternative at the institution and the units. Cost estimates of the training resources at the institution and units were acquired from the appropriate data sources. The total training costs for a given training alternative are distributed between institutional and unit training costs. The cost of the WOLVERINES that are required to support the institutional POI is included in the training costs to show the cost impact on training strategies which results from WOLVERINE requirements. The military personnel, Army (MPA) was not included in the LCCE, since fielding of the WOLVERINE will not change the army's fixed-end strength and is common across alternatives. The sustainment cost is based on the WOLVERINE's OPTEMPO miles of 680 per vehicle per year over the life of the vehicle. In determining the LCCE for the WOLVERINE at the institution and for initial unit training at the unit (Alternative 5), the 680 miles per vehicle per year cost was removed. It was replaced with the OPTEMPO cost based on the appropriate miles per vehicle per year for the defined POI in each training alternative. The sustainment cost of existing AVLBs assigned to the institution is an inherited asset common across alternatives and was therefore removed. The AVLBs "displaced" by the WOLVERINES at the units are reassigned to different units and are inherited assets; these systems are not included in the training costs.

The benefits of using the cost estimating relationships (CERs), which TRADOC Deputy Chief of Staff for Resource Management (DCSRM) developed, to estimate operations and maintenance, Army (OMA) nonpersonnel direct recurring costs for courses at the USAES were assessed. Comparisons were made among alternatives. Differences in resources and equipment among alternatives were examined for significance. The student load and class sizes were the same across alternatives and were no different from the existing 12F resource requirements. Since the differences in OMA nonpersonnel recurring expenses and base operations (BASOPs) do not change significantly between alternatives, these costs were not included.

**TADSS-CONFIGURATION SENSITIVITY ANALYSIS:** A sensitivity analysis was used to measure the relative magnitude of change in the TADSS' LCCE resulting from significant changes in the TADSS' functional capabilities. The USAES prioritized the functional capabilities of the WOLVERINE simulator. MOS 12F SMEs, in conjunction with knowledgeable training and education specialists, prioritized the functional capabilities. The three functional capabilities evaluated in this analysis are defined as follows:

- Priority 1 - Must have. This TADSS configuration is associated with the minimum functional capability necessary to carry out the USAES POI.
- Priority 2 - Need to have. This TADSS configuration possesses priority 1 capability (minimum functional capability) plus additional USAES-defined capabilities.
- Priority 3 - Would like to have. This TADSS configuration has the maximum functional capability, including priority 1 and 2 capabilities and additional capabilities as defined by the USAES. A detailed description of each priority is shown in Appendix D.

A cost sensitivity analysis was conducted based on the prioritization of the TADSS functional capabilities. Three successively broad ranges of functional capabilities were examined. Each range provided greater functional capabilities until all task (maximum) were included. The LCCE for the TADSS that were associated with each range were compared. This provided insight into the marginal cost of acquiring trainers with various levels of increased functional capability.

STRICOM provided validated ROM estimates for each of the TADSS priority levels (functional capabilities) for the WOLVERINE simulators. Table 2 show a comparison of the three LCCEs representing the three priority levels for the simulator.

Table 2. Simulator LCCE variations versus priority level (\$M)			
Cost Element	TADSS Priority 1	TADSS Priority 2	TADSS Priority 3
Software Development	4.7	5.3	5.8
Production	12.1	12.1	12.1
MIL Construction	3.7	3.7	3.7
Fielding	1.0	1.0	1.0
Hardware Maintenance	3.8	3.8	3.8
Software Maintenance	1.6	1.9	2.2
Operation	6.8	7.0	7.3
Total	33.9	34.9	35.9

The estimates for the simulator differed by 3 to 6 percent. Using 10 percent as a threshold for significance, there were no significant differences between estimates for configurations designated by priority.

#### **OPTEMPO ANALYSIS:**

OPTEMPO estimates consist of the cost to operate the WOLVERINE based on a per mile cost of \$145.00 FY96 constant dollars. It is assumed that this cost includes the repair parts; replenishment spares; petroleum, oils, and lubricants; and depot maintenance, including vehicle overhaul. It is also assumed that the per mile cost does not include any personnel costs. Each training alternative was examined to determine the OPTEMPO cost. The OPTEMPO for the 106 vehicles is 680 miles per vehicle per year. This provides an estimated OPTEMPO for the 20-year useful life cycle of the WOLVERINE tactical system of about 13,600 miles per vehicle. This estimate does not consider a specific POI developed by the USAES. Adjustments were made to the OPTEMPO to reflect the POI resource requirements for each alternative. SMEs at the USAES developed a parameter that established a relationship between the training class hours and miles expended on the WOLVERINE. This was applied for each POI. The following factors were used to develop the institutional and unit OPTEMPO cost for initial training:

- One class hour of driver training requires 15 WOLVERINE miles.
- One class hour of bridge launching and retrieving requires 15 WOLVERINE miles.

The POIs associated with each alternative were examined to determine the total institutional vehicle-training hours where moving-vehicle training (driving and bridge launching/retrieving) operations were conducted. These vehicle class hours were multiplied by the mileage factor (15 miles) for the number of miles per class and by the number of classes per year. This amount, the number of miles per year, was multiplied by the number of vehicles required for each training alternative to determine the OPTEMPO miles per year for the particular POI. Each alternative was compared to Alternative 4, which requires no TADSS. In this way, a comparison was made of the change in mileage requirements at the institution and the units. Table 3 provides a summary of the OPTEMPO miles and cost for each alternative.

Table 3. Institutional versus unit OPTEMPO					
Alt	Total MI/YR	Institutional OPTEMPO		Unit OPTEMPO	
		MI/VEH/YR	Cost (\$M)	MI/VEH/YR	Cost (\$M)
1	180,950	18,825	16.4	680	9.9
2	171,950	17,325	15.1	680	9.9
3	167,450	16,575	14.4	680	9.9
4	483,320	34,950	60.8	680	9.3
5	239,140	750	0.2	680 3,210 (UIT)	10.8 23.1
680 = Annual OPTEMPO miles required for sustainment and CAT UIT = Unit initial training (52 vehicles X 4 classes per yr)					

Alternative 1 compared to Alternative 4 reduces the institutional requirement from 12 WOLVERINES (Alternative 4) to 6. The number of miles per year that are required to train the 12F MOS to standard is reduced from 483,320 per year to 180,950, a reduction of 62.6 percent. The reduction in institutional vehicle-operation class hours, due to simulator training, reduces the annual per vehicle-operation miles from 34,950 to 18,825, a reduction of 46.1 percent. The unit OPTEMPO costs increased slightly from \$9.3 to \$9.9 million, an increase of 6 percent due to 6 more vehicles being available to the units.

Alternative 2 compared to Alternative 4 reduces the institutional requirements from 12 WOLVERINES (Alternative 4) to 6. The number of miles per year that are required to train the 12F MOS to standard is reduced from 483,320 per year to 171,950, a reduction of 64.4 percent. The reduction in institutional vehicle-operation class hours, due to simulator training, reduces the annual per vehicle-operation miles from 34,950 to 17,325, a reduction of 50.4 percent. The unit OPTEMPO costs are the same as in Alternative 1.

Alternative 3 compared to Alternative 4 reduces the institutional requirements from 12 WOLVERINES (Alternative 4) to 6. The number of miles per year that are required to train the 12F MOS to standard is reduced from 483,320 per year to 167,450, a reduction of 65.4 percent. The reduction in institutional vehicle-operation class hours, due to simulator training, reduces the annual per vehicle-operation miles from 34,950 to 16,575, a reduction of 52.6 percent. The unit OPTEMPO costs are the same as in Alternative 1.

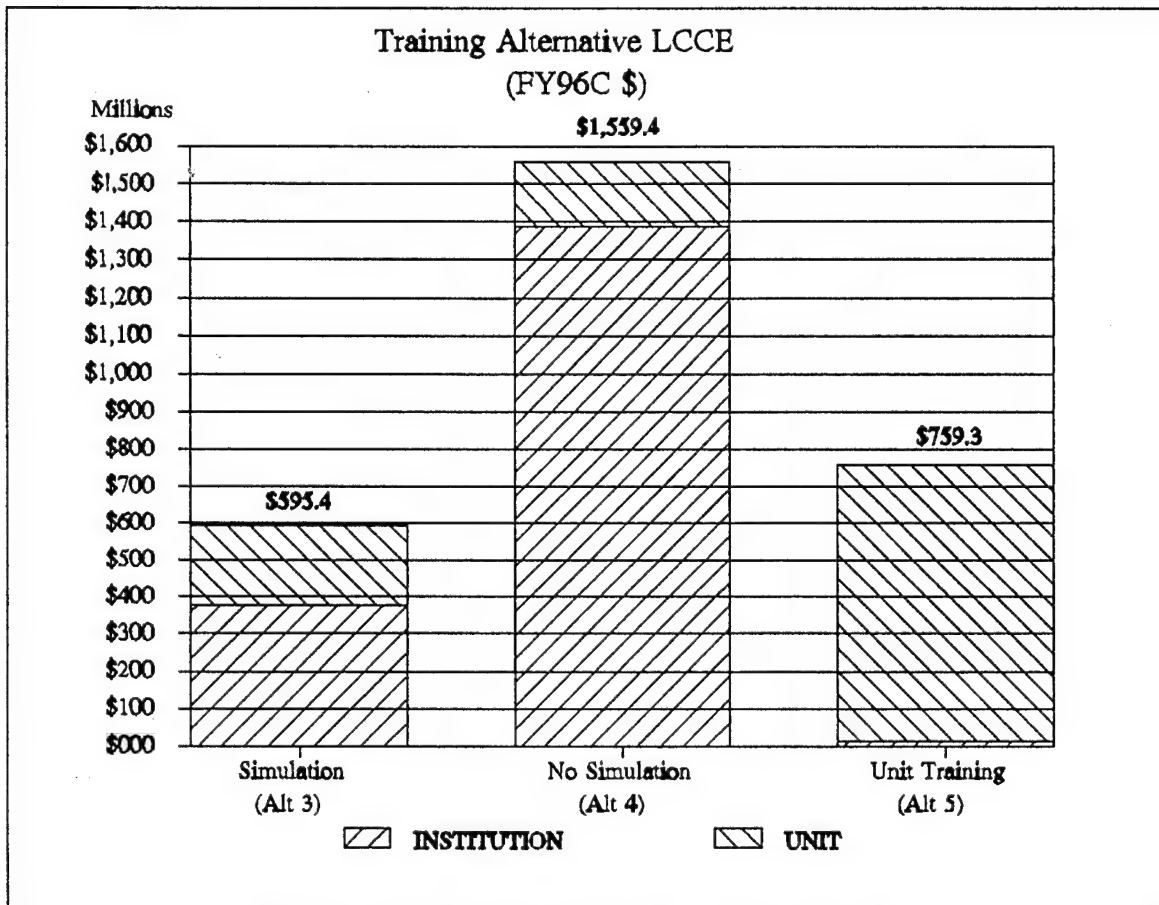
Alternative 5 compared to Alternative 4 reduces the institutional requirements from 12 WOLVERINES (Alternative 4) to 2. The number of miles per year that are required to train the 12F MOS to standard is reduced from 483,320 per year to 239,140, a reduction of 50.5 percent. Fewer institutional vehicle-operation class hours, due to familiarization training, reduces the annual per vehicle-operation miles from 34,950 to 750, a reduction of 97.9 percent. This training alternative while greatly reducing the institutional training costs, shifts the primary initial training burden to the unit. The UIT OPTEMPO miles are 3,060 per vehicle for 54 WOLVERINES, or a total OPTEMPO burden of 159,120 miles. When compared to the annual per vehicle miles for institutional training in Alternative 4 (34,950), this represents an increased of 455.3 percent for initial MOS training. The unit OPTEMPO costs increase from \$8.8 to \$9.7 million, an increase of 9.2 percent due to 104 more vehicles being available to the units.

**ANALYSIS RESULTS:** The analysis results show that simulation-based training at the institution is the most cost-effective training method. The simulation-based training alternatives (Alternative 1, 2, and 3) are separated by less than 10 percent, which is not considered significant for this analysis. Therefore, the report addresses only simulation-based training at the institution (Alternative 3), institutional training without simulation (Alternative 4), and UIT without simulation (Alternative 5).

#### **Alternative Cost:**

Figure 1 provides a comparison of training-alternative costs. The most costly is Alternative 4, \$1,559.4 (M), a nonsimulation-based training alternative using 12 WOLVERINES. The next is Alternative 5, the unit training alternative using 52 WOLVERINES (due to the decentralized nature of unit training) 4 times per year at \$759.3 (M), which is approximately 51.3 percent less.

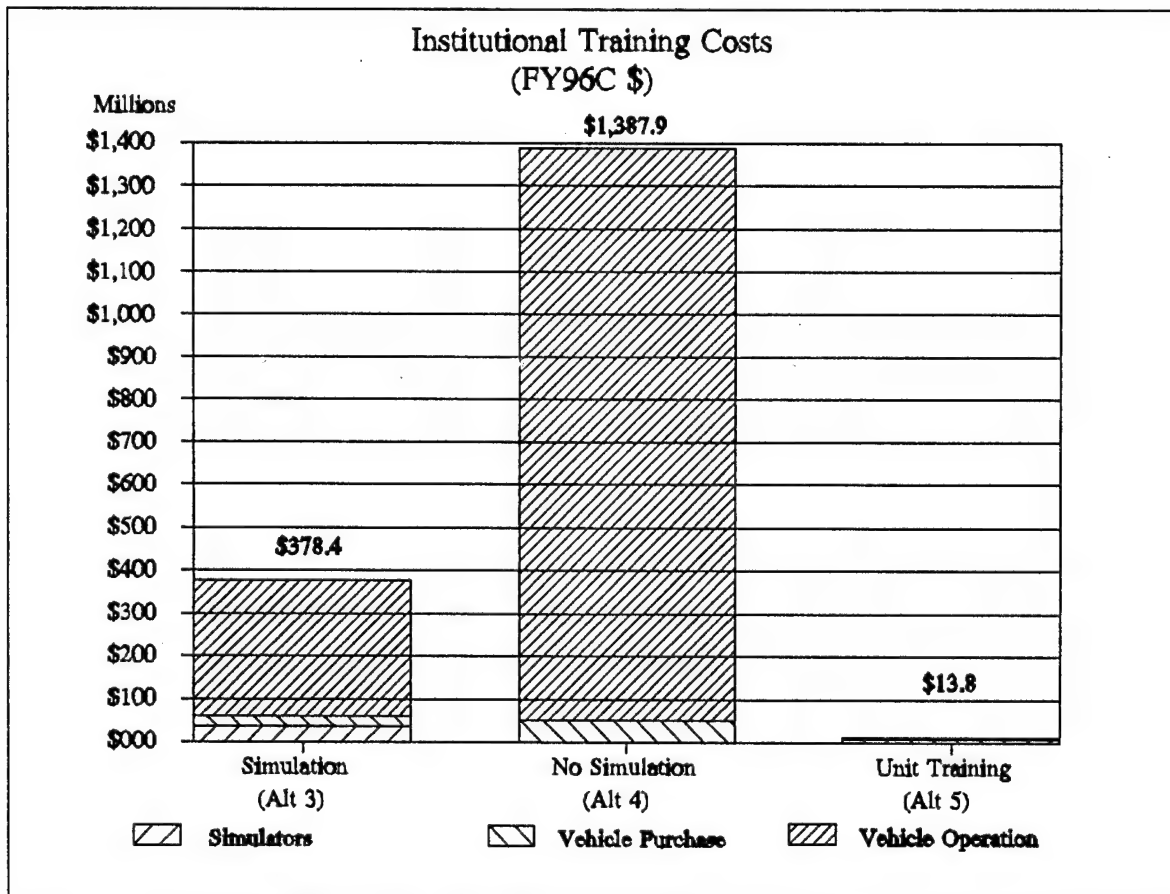
When comparing simulation-based training (Alternative 3) to the vehicle-based training (Alternative 4), the simulation training is approximately 62.2 percent less costly.



**Figure 1. Alternative training cost**

### ***Institutional Training Cost:***

Figure 2 provides a further examination of institutional training cost and shows the composition for each alternative. The cost of operating the WOLVERINEs at the institution accounts for the majority of the cost, followed by the simulators then the vehicles (except Alternative 5, which is comprised of familiarization training using two WOLVERINEs and no simulation).



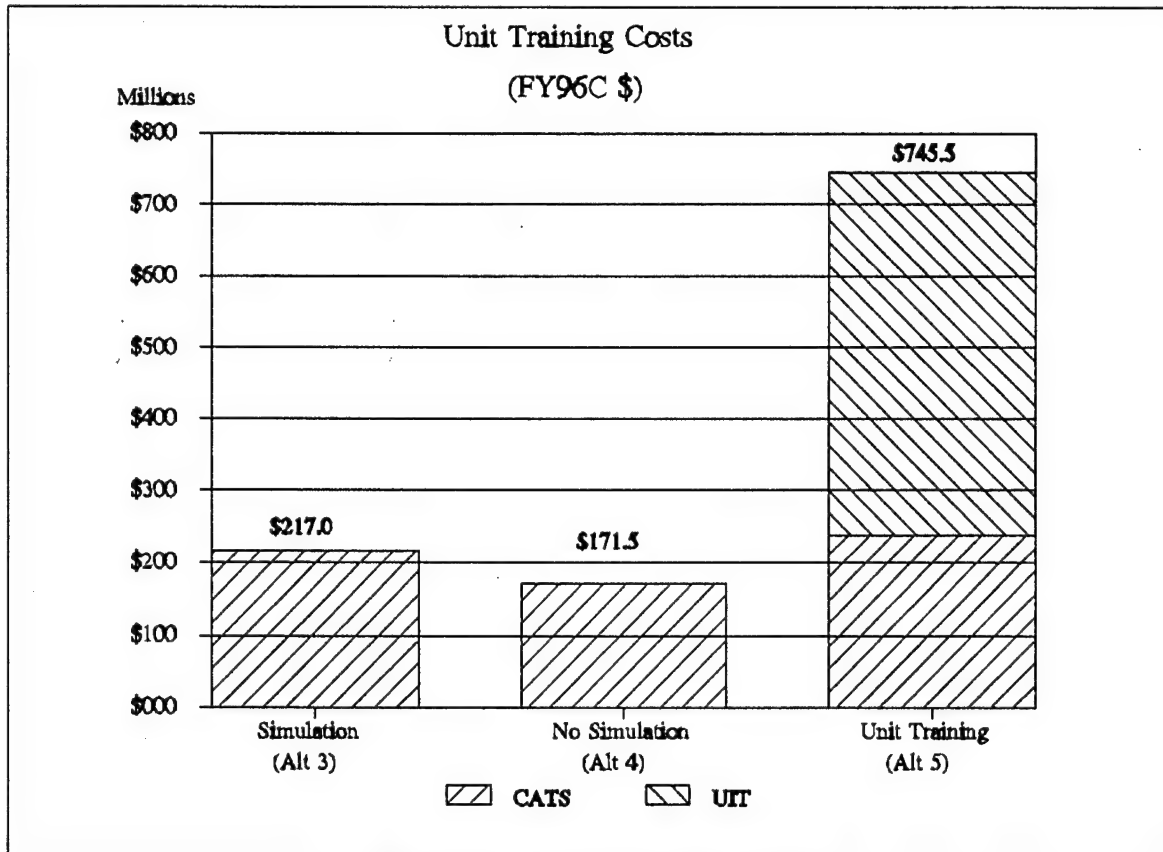
**Figure 2. Institutional training costs**

***Unit Training Cost:***

Figure 3 shows that CAT is the majority of the unit training costs. When the unit provides the initial vehicle training (Alternative 5), an additional \$506.9 (M) is required.

**Payback Analysis:** A payback analysis was performed to compare the simulation-based training alternative to the cost savings resulting from the reductions in WOLVERINE OPTEMPO as a result of acquiring the TADSS.

The time-phased LCCE of the simulation-based training strategy (Alternative 3) was compared to the savings in OPTEMPO using Alternative 4 OPTEMPO as the baseline. From this analysis, a net cost or savings was estimated. The payback period for the simulation-based training alternative was determined. The faster the payback period, the more favorable is the outcome.

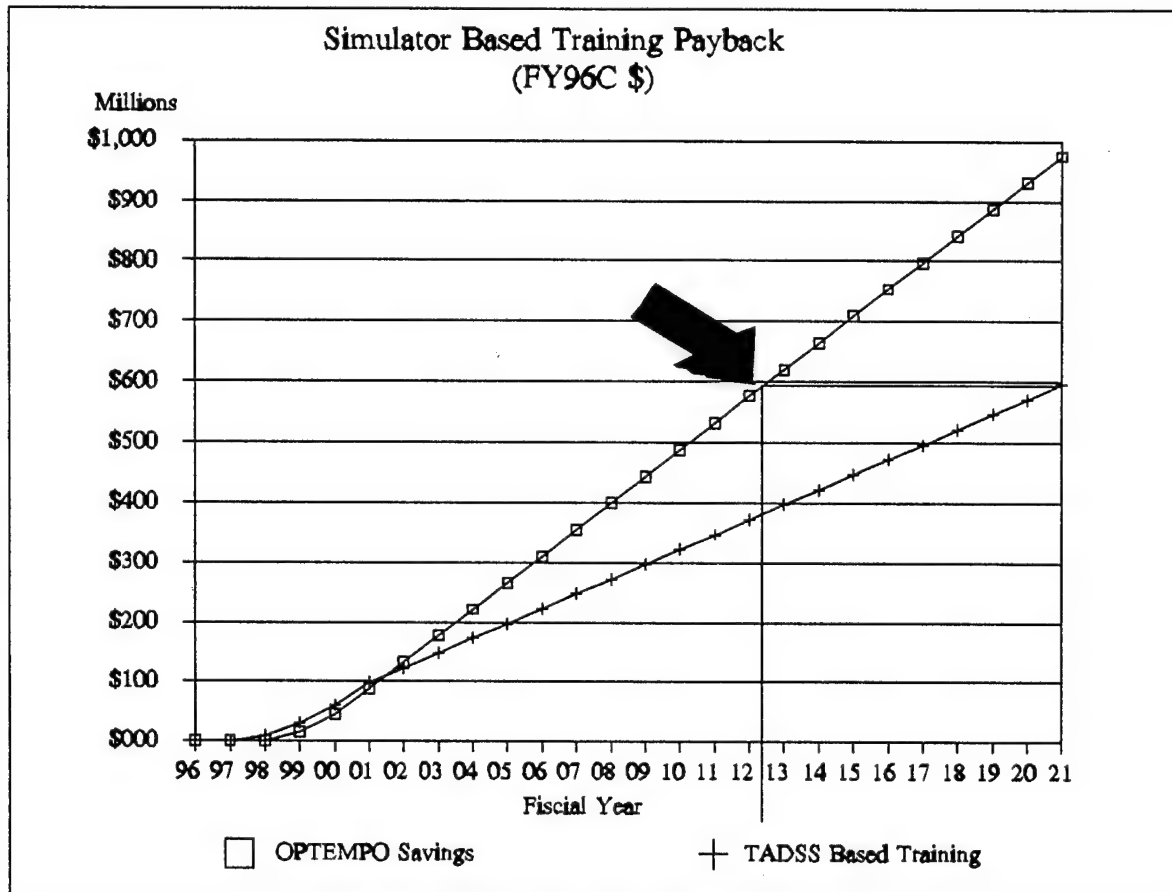


**Figure 3. Unit training cost**

Figure 4 shows the LCCE for training Alternative 3 that includes five simulators, the cost and operation of 6 WOLVERINES, and the unit OPTEMPO requirements (\$595.4 {M}). The savings in OPTEMPO over the life of the WOLVERINE is \$974.5 (M). The accumulated net savings would pay for the training alternative in 17 years from the start of the project (FY96), or about 10 years before the WOLVERINE is retired from the inventory in FY21.

Alternative 5 does not contains any OPTEMPO savings due to no simulators or simulations.





**Figure 4. Training Alternative 3**

## Chapter 4. Summary of Results

Objective 6: Provide the results of the analysis to the USAES for selection of the appropriate training alternative.

### EFFECTIVENESS ANALYSIS:

- One hundred and thirty-four of the Breacher tasks are applicable to the WOLVERINE with little or no modification, and four tasks are WOLVERINE-specific.
- There is no need to select special training methods or media since there is little or no difference between 12F and consolidated 12B soldiers.
- Hands-on training represents the majority of current unit task training in garrison or in a field environment.
- Traditional classroom instruction, in combination with hands-on training in garrison or in the field, is the second most common training method currently used to train WOLVERINE-related tasks.
- CAT exercises by themselves or in combination with hands-on training is considered to be effective training.
- Training limits, due to lack of funds, personnel cuts, and maintenance problems, were cited as the factors that had a direct impact on a unit's ability to accomplish sustainment training, training to standard, and new equipment training.
- Downtime, due to inadequate vehicle and equipment maintenance, was the primary reason for limited hands-on training.
- Easier, less expensive maintenance was cited as the key to providing significant training improvements.
- The Breacher Survey responses indicate that the tasks applicable to WOLVERINE training, in almost all cases, should include some form of hands-on instruction.
- USAES instructors chose the "classroom/demonstration/hands-on" combination, based on the Breacher Survey, as the top preference for training on almost all WOLVERINE tasks.

- USAES instructors had little confidence in the recommending use of simulator training or an obstacle range for any category of tasks based on the Breacher Survey. The overall consensus was that any deviation from the current training methods will require a significant reeducation of instructors before implementation.
- Additional training is required on NBC, tactical operations, and almost all communications tasks.

## **COST ANALYSIS:**

The following conclusions were reached based on the training strategies, POI, TADSS, LCCE, and the WOLVERINE POE.

- The WOLVERINE simulator will reduce OPTEMPO costs significantly for the given POIs.
- Total class vehicle miles are reduced significantly when using simulators in training.
- The training alternatives are ranked from the least expensive to the most expensive based on the total training costs (institution and unit) in FY96 constant dollars.

Simulation-Based Training (Alternative 3)	\$595.4 (M)
Vehicle-Based Unit Training (Alternative 5)	\$759.3 (M)
Vehicle-Based Institutional Training (Alternative 4)	\$1,559.4 (M)

- The most costly simulator provides the lowest cost training alternative.
- The savings from reduced OPTEMPO for simulation-based training will pay the entire LCCE for simulation-based training in about 17 years from the start of the program (FY96).
- The most costly alternative requires the greatest number of WOLVERINEs at the institution.

## APPENDIX A. Part 1

### TASK LIST

This task list was developed by combining the task list developed for the HAB and the Breacher CTEA task list. Breacher specific were not included.

TASK NO. MOS/ TASK TITLE  
HAB BRE S/L

1.	1	12F10	Perform Weekly PMCS
2.	2	12F10	Perform Before-Operations PMCS
3.	3	12F10	Perform During-Operations PMCS
4.	4	12F10	Perform Quarterly PMCS
5.	5	12F10	Perform After-Operations PMCS
6.	6	12F10	Perform Monthly PMCS
7.	8	12F30	Perform PMCS on modular armor
8.	9	12F10	Troubleshoot a HAB
9.	10	12F10	Repair Track components
10.	12	12F10	Repair Tracks
11.	13	12F10	Maintain the Operator's Equipment Record Folder
12.	14	12F20	Inspect Equipment Record Folders and Records
13.	15	12F10	Read and Use a Military Map
14.	16	12F20	Determine Elevation Using a Map
15.	17	12F20	Analyze Terrain
16.	18	12F20	Use a Map Overlay
17.	19	12F10	Operate the Position Locator System
18.	20	12F20	Manually Update Positive Navigational Information
19.	21	12F10	Start/Stop the Engine
20.	22	12F10	Load Supplies and Equipment
21.	23	12F10	Watch for the Enemy While in a Defensive Position
22.	24	12F10	Refuel Vehicle under Normal and Emergency Conditions
23.	25	12F20	Supervise Receipt, Storage, and Distribution of Supplies and Foods
24.	26	12F20	Supervise Loading of Personnel and Equipment
25.	27	12F10	Slave Start a HAB
26.	28	12F10	Employ the Camouflage System
27.	29	12F30	Secure at a Halt
28.	30	12F30	Camouflage Vehicles
29.	31	12F10	Move Under Direct Fire
30.	32	12F10	Tow a Vehicle
31.	33	12F10	Apply Proper Ground Guide Techniques

32.	34	12F10	React to Flares
33.	35	12F10	Move Under Indirect Fire
34.	37	12F20	Evade Anti-tank Guided Missiles
35.	38	12F30	Conduct Vehicle Tactical Navigation
36.	39	12F30	Supervise Towing a Track Vehicle
37.	40	12F30	Change Formation (Mounted)
38.	42	12F10	Operate the Engineer command and Control System
39.	45	12F10	Drive the HAB
40.	46	12F10	Ford a Stream
41.	48	12F20	Use Engine Condition Displays
42.	49	12F30	Move Mounted
43.	52	12F30	React to Indirect Fire
44.	53	12F30	Use Passive Air Defense Measures
45.	54	12F10	Direct Evacuation of a Wounded Crew Member
46.	55	12F10	Operate Portable Fire Extinguisher
47.	56	12F10	Recover Mired/Disabled Vehicles
48.	58	12F10	Self Recover a HAB
49.	59	12F10	Abandon a HAB: Driver
50.	60	12F30	Abandon a HAB: Commander
51.	62	12F10	Operate the Fire Extinguisher System
52.	63	12F20	Implement Emergency Procedures
53.	64	12F10	React to Oral Command/Visual Signs
54.	65	12F10	Apply Field Sanitation Methods
55.	70	12F10	Operate a Bilge Pump
56.	71	12F10	Install/Remove a Night Viewer
57.	72	12F10	Operate the Integrated Ration Heating Device
58.	75	12F10	Operate the Integral Smoke Generator
59.	76	12F10	Monitor Bus Indicator Lights
60.	77	12F10	Operate Night Vision Devices
61.	78	12F10	Operate the Forward Looking Infrared (FLIR) Device
62.	79	12F10	Operate a Personnel Heater
63.	80	12F20	Operate a 360 Degree Vision Device/Thermal Viewer
64.	81	12F20	Activate/Employ Decision Aids
65.	82	12F30	Employ the Override for Vehicle Performance Systems
66.	83	12F30	Respond to an advisory/Warning Message Display
67.	84	12F20	Evaluate Training
68.	85	12F20	Prepare to Conduct Training
69.	86	12F20	Conduct Training
70.	87	12F30	Supervise Training
71.	89	12F20	Conduct Vehicle Operational Training with One Crewman

72.	90	12F20	Train to Implement Redundant Systems Work around
73.	92	12F10	Stow Smoke Grenades
74.	93	12F30	Supervise Ammunition Receipt, Storage, Issue, and Loading
75.	94	12F30	Supervise Personnel Handling Ammunition
76.	96	12F10	Load/Unload Ammunition
77.	97	12F10	Perform PMCS on Communications Equipment
78.	98	12F10	Perform Operator PMCS on Radio Sets
79.	99	12F10	Install/Remove SINCGARS Radio
80.	100	12F10	Install/Remove Antennas
81.	101	12F10	Replace Communication Equipment Cables
82.	102	12F10	Maintain Communication Equipment
83.	103	12F10	Prepare SINCGARS for Operation
84.	104	12F10	Place into Operation an Intercom Set
85.	105	12F10	Operate a Hot-Loop Wire Communication System
86.	106	12F10	Enter/Leave a Net Using SINCGARS
87.	107	12F10	Operate the Communication System
88.	108	12F10	Operate a SINCGARS Radio
89.	110	12F30	Operate the Commander's Input Device
90.	111	12F30	Establish and Operate a Single-Channel Voice Radio
91.	112	12F10	Report Enemy Information
92.	113	12F10	Encode/Decode Messages
93.	114	12F20	Call For/Adjust Indirect Fire
94.	115	12F20	Receive/Issue Orders
95.	116	12F20	Coordinate with Adjacent Units
96.	117	12F20	Prepare/Generate Situation Reports
97.	118	12F20	Use a CEOI/SOI
98.	119	12F20	Generate Shell Reports
99.	127	12F30	Read JINTACCS
100.	128	12F30	Respond to an ATCCS Message
101.	129	12F10	Recognize Electronic Counter Measures
102.	130	12F10	Use Visual Signaling Techniques
103.	131	12F30	Establish Internal Communications (Wire) (Platoon)
104.	132	12F40	Prepare an After Action Report
105.	133	12F40	Conduct a Platoon During Action Review
106.	134	12F40	Conduct a Platoon After Action Review
107.	143	12F10	Load/Unload a Grenade Launcher (Smoke)
108.	152	12F20	Apply Special Handling Fire Procedures for NBC
109.	156	12F10	Operate Smoke Grenade Projectors
110.	163	12F30	React to an Ambush
111.	165	12F30	React to a Direct Fire/Anti-tank Guided Missile

			Attack
112.	166	12F10	Maintain an NBC Overpressure System
113.	167	12F10	Prepare for a Nuclear Attack: Driver
114.	168	12F10	Decontaminate a Vehicle
115.	169	12F10	Identify and Report NBC Attack/Agents
116.	170	12F20	Prepare for a Nuclear Attack: Commander
117.	171	12F20	Direct Preparation for an NBC Attack
118.	172	12F30	Plan NBC Operations
119.	173	12F30	Plan and Supervise Decontamination Operations
120.	174	12F40	Call/Report a Total Radiation Dose
121.	175	12F40	Plan and Supervise Positioning of NBC Alarms
122.	176	12F10	Operate the NBC Backup System
123.	177	12F10	Operate the NBC Overpressure System
124.	178	12F10	Operate in an NBC Environment with NBC Sensors Inoperative
125.	179	12F10	Operate NBC Protection
126.	180	12F30	Prepare for a Chemical Attack (Platoon)
127.	181	12F30	Prepare for a Nuclear Attack (Platoon)
128.	184	12F20	Conduct a Passage of Lines with Vehicle (s)
129.	187	12F30	Conduct a Passage of Lines
130.	190	12F10	React to Contact
131.	191	12F10	Disengage (Mounted)
132.	195	12F10	Conduct a River Crossing Site Reconnaissance
133.	202	12F10	Move through Urbanized Terrain
134.	203	12F10	Cross a defile (Mech)
135.		12F10	Launch the Bridge
136.		12F10	Retrieve the Bridge
137.		12F10	Perform PMCS on the Bridge
138.		12F20	Inspect the Bridge for Crossing Damage

## **APPENDIX A. Part 2.**

### **Task Function Category List**

#### **1. Category: Automotive Preventive Maintenance Checks and Services (PMCS)**

- Perform Weekly PMCS
- Perform Before-Operations PMCS
- Perform During-Operations PMCS
- Perform Quarterly PMCS
- Perform After-Operations PMCS
- Perform Monthly PMCS
- Perform PMCS on modular armor

#### **2. Category: Automotive Troubleshooting Tasks**

- Troubleshoot a HAB

#### **3. Category: Automotive Maintenance and Repair Tasks**

- Repair Track components
- Repair Tracks

#### **4. Category: Inventory and Record Keeping Tasks**

- Maintain the Operator's Equipment Record Folder
- Inspect Equipment Record Folders and Records

#### **5. Category: Orientation and Map reading Tasks**

- Read and Use a Military Map
- Determine Elevation Using a Map
- Analyze Terrain
- Use a Map Overlay
- Operate the Position Locator System
- Manually Update Positive Navigational Information

#### **6. Category: Static Vehicle Operations Tasks**

- Start/Stop the Engine
- Load Supplies and Equipment
- Watch for the Enemy While in a Defensive Position
- Refuel Vehicle under Normal and Emergency Conditions



Supervise Receipt, Storage, and Distribution of Supplies and Foods  
Supervise Loading of Personnel and Equipment  
Slave Start a HAB  
Employ the Camouflage System  
Secure at a Halt  
Camouflage Vehicles

#### **7. Category: Moving Vehicle Operations Tasks**

Move Under Direct Fire  
Tow a Vehicle  
Apply Proper Ground Guide Techniques  
React to Flares  
Move Under Indirect Fire  
Evade Anti-tank Guided Missiles  
Conduct Vehicle Tactical Navigation  
Supervise Towing a Track Vehicle  
Change Formation (Mounted)  
Operate the Engineer command and Control System  
Drive the HAB  
Ford a Stream  
Use Engine Condition Displays  
Move Mounted  
React to Indirect Fire  
Use Passive Air Defense Measures

#### **8. Category: Emergency Procedures and Recovery Tasks**

Direct Evacuation of a Wounded Crew Member  
Operate Portable Fire Extinguishers  
Recover Mired/Disabled Vehicles  
Self Recover a HAB  
Abandon a HAB: Driver  
Abandon a HAB: Commander  
Operate the Fire Extinguisher System  
Implement Emergency Procedures

#### **9. Category: Other Vehicle Tasks**

React to Oral Command/Visual Signs  
Apply Field Sanitation Methods  
Operate a Bilge Pump  
Instal/Remove a Night Viewer  
Operate the Integrated Ration Heating Device

Operate the Integral Smoke Generator  
Monitor Bus Indicator Lights  
Operate Night Vision Devices  
Operate the Forward Looking Infrared (FLIR) Device  
Operate a Personnel Heater  
Operate a 360 Degree Vision Device/Thermal Viewer  
Activate/Employ Decision Aids  
Employ the Override for Vehicle Performance Systems  
Respond to an advisory/Warning Message Display

**10. Category: Training Tasks**

Evaluate Training  
Prepare to Conduct Training  
Conduct Training  
Supervise Training  
Conduct Vehicle Operational Training with One Crewman  
Train to Implement Redundant Systems Work around

**11. Category: Ammunition Operations Tasks**

Stow Smoke Grenades  
Supervise Ammunition Receipt, Storage, Issue, and Loading  
Supervise Personnel Handling Ammunition  
Load/Unload Ammunition

**12. Category: Communication PMCS Tasks**

Perform PMCS on Communications Equipment  
Perform Operator PMCS on Radio Sets

**13. Category: Communications Maintenance, Repair and Troubleshooting Tasks**

Install/Remove SINCGARS Radio  
Install/Remove Antennas  
Replace Communication Equipment Cables  
Maintain Communication Equipment  
Prepare SINCGARS for Operation

**14. Category: Communication Operation Tasks**

Place into Operation an Intercom Set  
Operate a Hot-Loop Wire Communication System

Enter/Leave a Net Using SINCGARS  
Operate the Communication System  
Operate a SINCGARS Radio  
Operate the Commander's Input Device  
Establish and Operate a Single-Channel Voice Radio Station

**15. Category: Communication Messages Tasks**

Report Enemy Information  
Encode/Decode Messages  
Call For/Adjust Indirect Fire  
Receive/Issue Orders  
Coordinate with Adjacent Units  
Prepare/Generate Situation Reports  
Use a CEOI/SOI  
Generate Shell Reports  
Read JINTACCS Messages  
Respond to an ATCCS Message  
Recognize Electronic Counter Measures

**16. Category: Other Communications Tasks**

Use Visual Signaling Techniques  
Establish Internal Communications (Wire) (Platoon)  
Prepare an After Action Report  
Conduct a Platoon During Action Review  
Conduct a Platoon After Action Review

**17. Category: Gunnery Operations Tasks**

Load/Unload a Grenade Launcher  
Apply Special Handling Fire Procedures for NBC  
Operate Smoke Grenade Projectors  
React to an Ambush  
React to a Direct Fire/Anti-tank Guided Missile Attack

**18. Category: NBC Operations Tasks**

Maintain an NBC Overpressure System  
Prepare for a Nuclear Attack: Driver  
Decontaminate a Vehicle  
Identify and Report NBC Attack/Agents  
Prepare for a Nuclear Attack: Commander  
Direct Preparation for an NBC Attack

Plan NBC Operations  
Plan and Supervise Decontamination Operations  
Call/Report a Total Radiation Dose  
Plan and Supervise Positioning of NBC Alarms  
Operate the NBC Backup System  
Operate the NBC Overpressure System  
Operate in an NBC Environment with NBC Sensors Inoperative  
Operate NBC Protection  
Prepare for a Chemical Attack (Platoon)  
Prepare for a Nuclear Attack (Platoon)

**19. Category: Tactical Operations Tasks**

Conduct a Passage of Lines with Vehicle (s)  
Conduct a Passage of Lines  
React to Contact  
Disengage (Mounted)  
Conduct a River Crossing Site Reconnaissance  
Move through Urbanized Terrain  
Cross a defile (Mech)

**20. Category: Bridging Operations Tasks**

Launch the Bridge  
Retrieve the Bridge  
Perform PMCS on the Bridge  
Inspect the Bridge for Crossing damage

## **APPENDIX B. Part 1.**

### **Trainer and Student Survey Data**

The data contained in this survey was extracted from the Breacher Cost and Training Effectiveness Analysis dated April 1994, conducted by the TRADOC Analysis Center, White Sands Missile Range, NM. The Wolverine specific tasks were incorporated and the data ranges were estimated based upon the Breacher data and Subject Matter Experts. Rational: The Breacher and Wolverine are crewed by 12F MOS soldiers of the same skill level, and require the same skills and knowledge.

The unmodified data from the current Breacher CTEA Appendix C-1 will not be listed in this section. Wolverine specific or Breacher tasks that have been modified for the Wolverine will be listed with a rational statement.

NOTE: N/C = No Change.

Breacher CTEA Page NO. = The listed page number is from the Breacher CTEA completed by TRAC-WSMR, and is included for reference purposes.

<u>Task Title</u>	<u>Breacher Data CTEA Condition Page NO.</u>
<b>Category: Automotive Preventive Maintenance Checks and Services (PMCS)</b>	
Perform Before-Operations PMCS	N/C, page C-1
Perform During-Operations PMCS	N/C, page C-2
Perform After-Operations PMCS	N/C, page C-3

#### **Category: Automotive Troubleshooting Tasks**

Troubleshoot a HAB (Task title changed from Troubleshoot a Breacher.

Rational: The task is performed in the same manner at the same skill level.)

N/C, page C-4

#### **Category: Automotive Maintenance and Repair Tasks**

Repair Track components	N/C, page C-4
Repair Tracks	N/C, page C-5

## **Category: Inventory and Record Keeping Tasks**

Maintain the Operator's Equipment Record Folder N/C, page C-6

Inspect Equipment Record Folders and Records N/C, page C-7

## **Category: Orientation and Map reading Tasks**

Read and Use a Military Map N/C, page C-7

Determine Elevation Using a Map N/C, page C-7

Analyze Terrain N/C, page C-8

Use a Map Overlay N/C, page C-8

Operate the Position Locator System (Deleted the Word Breacher from the task title.

Rational: The task is performed in the same manner at the same skill level.)  
N/C, page C-8

Manually Update Positive Navigational Information N/C, page C-8

## **Category: Static Vehicle Operations Tasks**

Start/Stop the Engine N/C, page C-9

Load Supplies and Equipment N/C, page C-10

Watch for the Enemy While in a Defensive Position N/C, page C-10

Refuel Vehicle under Normal and Emergency Conditions N/C, page C-10

Supervise Receipt, Storage, and Distribution of Supplies and Foods  
N/C, page C-10

Supervise Loading of Personnel and Equipment N/C, page C-11

Slave Start a HAB (Changed the Word Breacher to HAB in the task title.  
Rational: The task is performed in the same manner at the same skill level.)  
N/C, page C-11

Employ the Camouflage System (Deleted the Word Operate from the task title.  
Rational: The task is performed in the same manner at the same skill level.)  
N/C, page C-11

Secure at a Halt N/C, page C-11

Camouflage Vehicles (Deleted the Words "and Equipment (Platoon) from the task title.  
Rational: The task is performed in the same manner at the same skill level.)  
N/C, page C-12

### **Category: Moving Vehicle Operations Tasks**

Move Under Direct Fire N/C, page C-12

Tow a Vehicle N/C, page C-12

Apply Proper Ground Guide Techniques N/C, page C-12

React to Flares N/C, page C-13

Move Under Indirect Fire N/C, page C-13

Evade Anti-tank Guided Missiles N/C, page C-14

Conduct Vehicle Tactical Navigation N/C, page C-14

Supervise Towing a Track Vehicle N/C, page C-14

Change Formation (Mounted) N/C, page C-15

Operate the Engineer command and Control System N/C, page C-15

Drive the HAB (Changed the Word Breacher to HAB in the task title.  
Rational: The task is performed in the same manner at the same skill level.)  
N/C, page C-17

Ford a Stream N/C, page C-18

Use Engine Condition Displays N/C, page C-18

Move Mounted N/C, page C-18

React to Indirect Fire N/C, page C-19

Use Passive Air Defense Measures

N/C, page C-20

### **Category: Emergency Procedures and Recovery Tasks**

Direct Evacuation of a Wounded Crew Member

N/C, page C-20

Operate Portable Fire Extinguisher

N/C, page C-20

Recover Mired/Disabled Vehicles

N/C, page C-20

Self Recover a HAB (Changed the Word Breacher to HAB in the task title.  
Rational: The task is performed in the same manner at the same skill level.)

N/C, page C-21

Abandon a HAB: Driver (Changed the Word Breacher to HAB in the task title.  
Rational: The task is performed in the same manner at the same skill level.)

N/C, page C-21

Abandon a HAB: Commander (Changed the Word Breacher to HAB in the task title.  
Rational: The task is performed in the same manner at the same skill level.)

N/C, page C-21

Operate the Fire Extinguisher System

N/C, page C-22

Implement Emergency Procedures

N/C, page C-22

### **Category: Other Vehicle Tasks**

React to Oral Command/Visual Signs

N/C, page C-23

Apply Field Sanitation Methods

N/C, page C-23

Operate a Bilge Pump

N/C, page C-24

Install/Remove a Night Viewer

N/C, page C-25

Operate the Integrated Ration Heating Device

N/C, page C-25

Operate the Integral Smoke Generator

N/C, page C-26

Monitor Bus Indicator Lights

N/C, page C-26



Operate Night Vision Devices	N/C, page C-27
Operate the Forward Looking Infrared (FLIR) Device	N/C, page C-28
Operate a Personnel Heater	N/C, page C-28
Operate a 360 Degree Vision Device/Thermal Viewer	N/C, page C-28
Activate/Employ Decision Aids	N/C, page C-29
Employ the Override for Vehicle Performance Systems	N/C, page C-29
Respond to an advisory/Warning Message Display	N/C, page C-29

### **Category: Training Tasks**

Evaluate Training	N/C, page C-30
Prepare to Conduct Training	N/C, page C-30
Conduct Training	N/C, page C-30
Supervise Training	N/C, page C-30
Conduct Vehicle Operational Training with One Crewman	N/C, page C-31
Train to Implement Redundant Systems Workarounds	N/C, page C-31

### **Category: Ammunition Operations Tasks**

Stow Smoke Grenades	N/C, page C-32
Supervise Ammunition Receipt, Storage, Issue, and Loading	N/C, page C-32
Supervise Personnel Handling Ammunition	N/C, page C-32
Load/Unload Ammunition	N/C, page C-33

### **Category: Communication PMCS Tasks**

Perform PMCS on Communications Equipment	N/C, page C-34
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## **Category: Communications Maintenance, Repair and Troubleshooting Tasks**

Install/Remove SINCGARS Radio	N/C, page C-35
Install/Remove Antennas	N/C, page C-35
Replace Communication Equipment Cables	N/C, page C-35
Maintain Communication Equipment	N/C, page C-35
Prepare SINCGARS for Operation	N/C, page C-36

## **Category: Communication Operation Tasks**

Place into Operation an Intercom Set	N/C, page C-37
Operate a Hot-Loop Wire Communication System	N/C, page C-37
Operate the Communication System (Deleted the Word Breacher from the task title. Rational: The task is performed in the same manner at the same skill level.)	N/C, page C-38
Operate a SINCGARS Radio	N/C, page C-38
Establish and Operate a Single-Channel Voice Radio Station	N/C, page C-39

## **Category: Communication Messages Tasks**

Report Enemy Information	N/C, page C-40
Encode/Decode Messages	N/C, page C-40
Call For/Adjust Indirect Fire	N/C, page C-40
Prepare/Generate Situation Reports	N/C, page C-40
Use a CEOI/SOI	N/C, page C-41
Generate Shell Reports	N/C, page C-41
Read JINTACCS Messages	N/C, page C-43

Respond to an ATCCS Message	N/C, page C-43
Recognize Electronic Counter Measures	N/C, page C-43

### **Category: Other Communications Tasks**

Use Visual Signaling Techniques	N/C, page C-44
Establish Internal Communications (Wire) (Platoon)	N/C, page C-44
Prepare an After Action Report	N/C, page C-45
Conduct a Platoon During Action Review	N/C, page C-45
Conduct a Platoon After Action Review	N/C, page C-45

### **Category: Gunnery Operations Tasks**

Load/Unload a Grenade Launcher	N/C, page C-48
Operate Smoke Grenade Projectors	N/C, page C-52
React to an Ambush	N/C, page C-54
React to a Direct Fire/Anti-tank Guided Missile Attack	N/C, page C-54

### **Category: NBC Operations Tasks**

Maintain an NBC Over-pressure System	N/C, page C-55
Prepare for a Nuclear Attack: Driver	N/C, page C-55
Decontaminate a Vehicle	N/C, page C-56
Identify and Report NBC Attack/Agents	N/C, page C-56
Prepare for a Nuclear Attack: Commander	N/C, page C-56
Direct Preparation for an NBC Attack	N/C, page C-56
Plan NBC Operations	N/C, page C-56
Plan and Supervise Decontamination Operations	N/C, page C-57

Call/Report a Total Radiation Dose	N/C, page C-57
Plan and Supervise Positioning of NBC Alarms	N/C, page C-57
Operate the NBC Backup System	N/C, page C-57
Operate the NBC Over-pressure System	N/C, page C-58
Operate in an NBC Environment with NBC Sensors Inoperative	N/C, page C-59
Operate NBC Protection	N/C, page C-59
Prepare for a Chemical Attack (Platoon)	N/C, page C-60
Prepare for a Nuclear Attack (Platoon)	N/C, page C-60

### **Category: Tactical Operations Tasks**

Conduct a Passage of Lines with Vehicle (s)	N/C, page C-61
Conduct a Passage of Lines	N/C, page C-62
React to Contact	N/C, page C-63
Disengage (Mounted)	N/C, page C-63
Conduct a River Crossing Site Reconnaissance	N/C, page C-64
Move through Urbanized Terrain	N/C, page C-66
Cross a defile (Mech)	N/C, page C-66

NOTE: The following tasks are Wolverine specific. The data used will be extracted from Breacher tasks that require the same level of Knowledge and skill, and are performed at the same skill level.

Rational: No Wolverine specific data collection has been accomplished at this time. By using Breacher tasks that are the same in nature (mechanical vs mechanical), the training data will be similar in scope and diversity.

## **Category: Bridging Operations Tasks**

Launch the Bridge (The task training data is from the Breacher task: Operate a Breacher Using Mine Clearing Blade) N/C, page C-16

Retrieve the Bridge (The task training data is from the Breacher task: Operate a Breacher Using Mine Clearing Blade) N/C, page C-16

Perform PMCS on the Bridge (The task training data is from the Breacher task: Perform Before-Operations PMCS) N/C, page C-1

Inspect the Bridge for Crossing Damage (The task training data is from the Breacher task: Perform During-Operations PMCS) N/C, page C-2

## APPENDIX B. Part 2.

### Unit Soldiers and Trainer Survey Data

The data contained in this survey was extracted from the Breacher Cost and Training Effectiveness Analysis dated April 1994, conducted by the TRADOC Analysis Center, White Sands Missile Range, NM. The Wolverine specific tasks were incorporated and the data ranges were estimated based upon the Breacher data and Subject Matter Experts. Rational: The Breacher and Wolverine are crewed by 12F MOS soldiers of the same skill level, and require the same skills and knowledge.

The unmodified data from the current Breacher CTEA Appendix C-2 will not be listed in this section. Wolverine specific or Breacher tasks that have been modified for the Wolverine will be listed with a rational statement.

NOTE: N/C = No Change

Breacher CTEA Page NO. = The listed page number is from the Breacher CTEA completed by TRAC-WSMR, and is included for reference purposes.

<u>Task Title</u>	<u>Breacher Data      CTEA Condition   Page No.</u>
<b>Category: Automotive Preventive Maintenance Checks and Services (PMCS)</b>	
Perform Weekly PMCS	N/C, page C-69
Perform Before-Operations PMCS	N/C, page C-70
Perform During-Operations PMCS	N/C, page C-70
Perform Quarterly PMCS	N/C, page C-71
Perform After-Operations PMCS	N/C, page C-72
Perform Monthly PMCS	N/C, page C-73

### **Category: Automotive Troubleshooting Tasks**

Troubleshoot a HAB (Task title changed from Troubleshoot a Breacher. Rational: The task is performed in the same manner at the same skill level.)

N/C, page C-74

## **Category: Automotive Maintenance and Repair Tasks**

Repair Track components N/C, page C-75

Repair Tracks N/C, page C-76

## **Category: Inventory and Record Keeping Tasks**

Maintain the Operator's Equipment Record Folder N/C, page C-77

Inspect Equipment Record Folders and Records N/C, page C-78

## **Category: Orientation and Map reading Tasks**

Read and Use a Military Map N/C, page C-79

Determine Elevation Using a Map N/C, page C-80

Analyze Terrain N/C, page C-81

Use a Map Overlay N/C, page C-82

Operate the Position Locator System (Deleted the Word Breacher from the task title. Rational: The task is performed in the same manner at the same skill level.) N/C, page C-83

Manually Update Positive Navigational Information N/C, page C-83

## **Category: Static Vehicle Operations Tasks**

Start/Stop the Engine N/C, page C-84

Load Supplies and Equipment N/C, page C-85

Watch for the Enemy While in a Defensive Position N/C, page C-86

Refuel Vehicle under Normal and Emergency Conditions N/C, page C-87

Supervise Receipt, Storage, and Distribution of Supplies and Foods  
N/C, page C-88

Supervise Loading of Personnel and Equipment N/C, page C-88

Slave Start a HAB (Changed the Word Breacher to HAB in the task title.  
Rational: The task is performed in the same manner at the same skill level.)  
N/C, page C-89

Employ the Camouflage System (Deleted the Word Operate from the task title.  
Rational: The task is performed in the same manner at the same skill level.)  
N/C, page C-90

Secure at a Halt  
N/C, page C-91

Camouflage Vehicles (Deleted the Words "and Equipment (Platoon) from the task  
title. Rational: The task is performed in the same manner at the same skill  
level.)  
N/C, page C-92

### **Category: Moving Vehicle Operations Tasks**

Move Under Direct Fire  
N/C, page C-93

Tow a Vehicle  
N/C, page C-94

Apply Proper Ground Guide Techniques  
N/C, page C-94

React to Flares  
N/C, page C-95

Move Under Indirect Fire  
N/C, page C-96

Evade Anti-tank Guided Missiles  
N/C, page C-98

Conduct Vehicle Tactical Navigation  
N/C, page C-99

Supervise Towing a Track Vehicle  
N/C, page C-100

Change Formation (Mounted)  
N/C, page C-101

Operate the Engineer command and Control System  
N/C, page C-103

Drive the HAB (Changed the Word Breacher to HAB in the task title. Rational:  
The task is performed in the same manner at the same skill level.)  
N/C, page C-105

Ford a Stream  
N/C, page C-106

Use Engine Condition Displays  
N/C, page C-107



Move Mounted	N/C, page C-107
React to Indirect Fire	N/C, page C-110
Use Passive Air Defense Measures	N/C, page C-111

### **Category: Emergency Procedures and Recovery Tasks**

Direct Evacuation of a Wounded Crew Member	N/C, page C-112
Operate Portable Fire Extinguisher	N/C, page C-113
Recover Mired/Disabled Vehicles	N/C, page C-113
Self Recover a HAB (Changed the Word Breacher to HAB in the task title. Rational: The task is performed in the same manner at the same skill level.)	N/C, page C-115
Abandon a HAB: Driver (Changed the Word Breacher to HAB in the task title. Rational: The task is performed in the same manner at the same skill level.)	N/C, page C-116
Abandon a HAB: Commander (Changed the Word Breacher to HAB in the task title. Rational: The task is performed in the same manner at the same skill level.)	N/C, page C-117
Operate the Fire Extinguisher System	N/C, page C-118
Implement Emergency Procedures	N/C, page C-119

### **Category: Other Vehicle Tasks**

React to Oral Command/Visual Signs	N/C, page C-120
Apply Field Sanitation Methods	N/C, page C-121
Operate a Bilge Pump	N/C, page C-125
Install/Remove a Night Viewer	N/C, page C-125
Operate the Integrated Ration Heating Device	N/C, page C-126
Operate the Integral Smoke Generator	N/C, page C-127

Monitor Bus Indicator Lights	N/C, page C-128
Operate Night Vision Devices	N/C, page C-128
Operate the Forward Looking Infrared (FLIR) Device	N/C, page C-129
Operate a Personnel Heater	N/C, page C-130
Operate a 360 Degree Vision Device/Thermal Viewer	N/C, page C-130
Activate/Employ Decision Aids	N/C, page C-131
Employ the Override for Vehicle Performance Systems	N/C, page C-131
Respond to an advisory/Warning Message Display	N/C, page C-132

### **Category: Training Tasks**

Evaluate Training	N/C, page C-132
Prepare to Conduct Training	N/C, page C-133
Conduct Training	N/C, page C-134
Supervise Training	N/C, page C-135
Conduct Vehicle Operational Training with One Crewman	N/C, page C-137
Train to Implement Redundant Systems Workarounds	N/C, page C-137

### **Category: Ammunition Operations Tasks**

Stow Smoke Grenades	N/C, page C-138
Supervise Ammunition Receipt, Storage, Issue, and Loading	N/C, page C-139
Supervise Personnel Handling Ammunition	N/C, page C-140
Load/Unload Ammunition	N/C, page C-141

### **Category: Communication PMCS Tasks**

Perform PMCS on Communications Equipment	N/C, page C-143
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## **Category: Communications Maintenance, Repair and Troubleshooting Tasks**

Install/Remove SINCGARS Radio	N/C, page C-144
Install/Remove Antennas	N/C, page C-145
Replace Communication Equipment Cables	N/C, page C-145
Maintain Communication Equipment	N/C, page C-146
Prepare SINCGARS for Operation	N/C, page C-146

## **Category: Communication Operation Tasks**

Place into Operation an Intercom Set	N/C, page C-147
Operate a Hot-Loop Wire Communication System	N/C, page C-147
Operate the Communication System (Deleted the Word Breacher from the task title. Rational: The task is performed in the same manner at the same skill level.)	N/C, page C-149
Operate a SINCGARS Radio	N/C, page C-150
Establish and Operate a Single-Channel Voice Radio Station	N/C, page C-153

## **Category: Communication Messages Tasks**

Report Enemy Information	N/C, page C-156
Encode/Decode Messages	N/C, page C-157
Call For/Adjust Indirect Fire	N/C, page C-158
Prepare/Generate Situation Reports	N/C, page C-159
Use a CEOI/SOI	N/C, page C-160
Generate Shell Reports	N/C, page C-160
Respond to an ATCCS Message	N/C, page C-164

Recognize Electronic Counter Measures N/C, page C-164

### **Category: Other Communications Tasks**

Use Visual Signaling Techniques N/C, page C-165

Establish Internal Communications (Wire) (Platoon) N/C, page C-166

Prepare an After Action Report N/C, page C-167

Conduct a Platoon During Action Review N/C, page C-168

Conduct a Platoon After Action Review N/C, page C-169

### **Category: Gunnery Operations Tasks**

Load/Unload a Grenade Launcher (smoke) N/C, page C-175

Operate Smoke Grenade Projectors N/C, page C-187

React to an Ambush N/C, page C-192

React to a Direct Fire/Anti-tank Guided Missile Attack N/C, page C-194

### **Category: NBC Operations Tasks**

Maintain an NBC Over-pressure System N/C, page C-195

Prepare for a Nuclear Attack: Driver N/C, page C-196

Decontaminate a Vehicle N/C, page C-197

Identify and Report NBC Attack/Agents N/C, page C-198

Prepare for a Nuclear Attack: Commander N/C, page C-199

Direct Preparation for an NBC Attack N/C, page C-200

Plan NBC Operations N/C, page C-201

Plan and Supervise Decontamination Operations N/C, page C-202

Call/Report a Total Radiation Dose N/C, page C-202

Plan and Supervise Positioning of NBC Alarms	N/C, page C-203
Operate the NBC Backup System	N/C, page C-204
Operate the NBC Over-pressure System	N/C, page C-205
Operate in an NBC Environment with NBC Sensors Inoperative	N/C, page C-206
Operate NBC Protection	N/C, page C-207
Prepare for a Chemical Attack (Platoon)	N/C, page C-208
Prepare for a Nuclear Attack (Platoon)	N/C, page C-209

### **Category: Tactical Operations Tasks**

Conduct a Passage of Lines with Vehicle (s)	N/C, page C-212
Conduct a Passage of Lines	N/C, page C-215
React to Contact	N/C, page C-218
Disengage (Mounted)	N/C, page C-219
Conduct a River Crossing Site Reconnaissance	N/C, page C-223
Move through Urbanized Terrain	N/C, page C-229
Cross a defile (Mech)	N/C, page C-230

NOTE: The following tasks are Wolverine specific. The data used will be extracted from Breacher tasks that require the same level of Knowledge and skill, and are performed at the same skill level.

Rational: No Wolverine specific data collection has been accomplished at this time. By using Breacher tasks that are the same in nature (mechanical vs mechanical), the training data will be similar in scope and diversity.

### **Category: Bridging Operations Tasks**

Launch the Bridge (The task training data is from the Breacher task: Operate a Breacher Using Mine Clearing Blade)	N/C, page C-104
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Retrieve the Bridge (The task training data is from the Breacher task: Operate a Breacher Using Mine Clearing Blade) N/C, page C-104

Perform PMCS on the Bridge (The task training data is from the Breacher task: Perform Before-Operations PMCS) N/C, page C-70

Inspect the Bridge for Crossing Damage (The task training data is from the Breacher task: Perform During-Operations PMCS) N/C, page C-70

## APPENDIX C.

### Potential Wolverine Training Method Sub-analysis Summary

**Current Training Methods.** This sub analysis was conducted using the same rational and data from the Breacher CTEA Appendix D. The difference in findings results from the elimination of task data that is not relevant to the Wolverine. Only the top three selected training types are displayed.

#### Category: Automotive Preventive Maintenance Checks and Services (PMCS)

TYPE OF TRAINING	UNIT	INSTITUTION
Classroom, Demo, Hands-On	18%	29%
Classroom, Hands-On	13%	19%
Hands-On	51%	32%

#### Category: Automotive Troubleshooting Tasks

TYPE OF TRAINING	UNIT	INSTITUTION
Classroom, Demo, Hands-On	19%	36%
Computer Assist, Demo, Hands-On	03%	14%
Hands-On	39%	27%

#### Category: Automotive Maintenance and Repair Tasks

TYPE OF TRAINING	UNIT	INSTITUTION
Classroom, Demo, Hands-On		39%
Classroom, Hands-On	10%	16%
Demo, Hands-On	13%	
Hands-On	55%	34%

**Category: Inventory and Record Keeping Tasks**

TYPE OF TRAINING	UNIT	INSTITUTION
Classroom	24%	41%
Classroom, Demo, Hands-On		21%
Classroom, Hands-On	22%	10%
Hands-On	27%	

**Category: Orientation and Map reading Tasks**

TYPE OF TRAINING	UNIT	INSTITUTION
Classroom		26%
Classroom, Demo, Hands-On	12%	24%
Classroom, Hands-On	23%	11%
Hands-On	24%	

**Category: Static Vehicle Operations Tasks**

TYPE OF TRAINING	UNIT	INSTITUTION
Classroom		15%
Classroom, Demo, Hands-On	10%	
Classroom, Hands-On	09%	10%
Hands-On	45%	22%



**Category: Moving Vehicle Operations Tasks**

TYPE OF TRAINING	UNIT	INSTITUTION
Classroom, Demo, Hands-On	12%	20%
Classroom, Hands-On	12%	11%
Hands-On	26%	22%

**Category: Emergency Procedures and Recovery Tasks**

TYPE OF TRAINING	UNIT	INSTITUTION
Classroom, Demo, Hands-On	12%	26%
Classroom, Hands-On	13%	14%
Demo, Hands-On	12%	
Hands-On	36%	19%

**Category: Other Vehicle Tasks**

TYPE OF TRAINING	UNIT	INSTITUTION
Classroom, Demo, Hands-On	11%	26%
Classroom, Hands-On		16%
Demo, Hands-On	11%	
Hands-On	25%	13%

**Category: Training Tasks**

TYPE OF TRAINING	UNIT	INSTITUTION
Classroom		29%
Classroom, Demo, Hands-On	17%	18%
Classroom, Hands-On	15%	
Hands-On	26%	18%

**Category: Ammunition Operations Tasks**

TYPE OF TRAINING	UNIT	INSTITUTION
Classroom, Demo, Hands-On	16%	27%
Classroom, Hands-On	15%	20%
Hands-On	34%	23%

**Category: Communication PMCS Tasks**

TYPE OF TRAINING	UNIT	INSTITUTION
Classroom, Demo, Hands-On		41%
Classroom, Hands-On	14%	18%
Demo, Hands-On	14%	
Hands-On	36%	32%

**Category: Communications Maintenance, Repair and Troubleshooting Tasks**

TYPE OF TRAINING	UNIT	INSTITUTION
Classroom, Demo, Hands-On	17%	35%
Classroom, Hands-On	16%	16%
Hands-On	35%	22%

**Category: Communication Operation Tasks**

TYPE OF TRAINING	UNIT	INSTITUTION
Classroom, Demo, Hands-On	17%	28%
Classroom, Hands-On	15%	18%
Hands-On	25%	17%

**Category: Communication Messages Tasks**

TYPE OF TRAINING	UNIT	INSTITUTION
Classroom	19%	22%
Classroom, Demo, Hands-On		18%
Classroom, Hands-On	17%	23%
Hands-On	18%	

**Category: Other Communications Tasks**

TYPE OF TRAINING	UNIT	INSTITUTION
Classroom	21%	21%
Classroom, Hands-On	20%	25%
Hands-On	25%	17%

**Category: Gunnery Operations Tasks**

TYPE OF TRAINING	UNIT	INSTITUTION
Classroom, Demo, Hands-On	15%	24%
Classroom, Hands-On	12%	14%
Hands-On	26%	25%

**Category: NBC Operations Tasks**

TYPE OF TRAINING	UNIT	INSTITUTION
Classroom, Demo, Hands-On	15%	28%
Classroom, Hands-On	18%	21%
Hands-On	22%	18%

**Category: Tactical Operations Tasks**

TYPE OF TRAINING	UNIT	INSTITUTION
Classroom, Demo, Hands-On	10%	18%
Classroom, Hands-On	21%	25%
Hands-On	24%	22%

## Category: Bridging Operations Tasks

NOTE: The following tasks are Wolverine specific. The task data used was extracted from Breacher tasks that require the same level of Knowledge and skill, and are performed at the same skill level. The specific tasks are listed under this heading in Appendix B.

Rational: Using Breacher tasks that are the same in nature (mechanical vs mechanical), it is the opinion of the training analyst and subject matter experts the training data will be similar in scope and diversity.

TYPE OF TRAINING	UNIT	INSTITUTION
Classroom, Demo, Hands-On	14%	34%
Classroom, Hands-On	10%	18%
Hands-On	40%	16%

## **SELECTION FREQUENCY OF FUTURE TRAINING METHODS FOR WOLVERINE TASKS BY CATEGORY**

NOTE: The values represent combined percentages of training method selections which include the specified training method alone and/or in some combination with other training methods.

### **Category: Automotive Preventive Maintenance Checks and Services (PMCS)**

TYPE OF TRAINING	UNIT	INSTITUTION
Computer Assisted Training	6.0%	0.0%
Full Motion Simulator	0.0%	0.0%
Obstacle Range	0.0%	0.0%

### **Category: Automotive Troubleshooting Tasks**

TYPE OF TRAINING	UNIT	INSTITUTION
Computer Assisted Training	12.0%	0.0%
Full Motion Simulator	0.0%	0.0%
Obstacle Range	0.0%	0.0%

### **Category: Automotive Maintenance and Repair Tasks**

TYPE OF TRAINING	UNIT	INSTITUTION
Computer Assisted Training	6.0%	0.0%
Full Motion Simulator	0.0%	0.0%
Obstacle Range	0.0%	0.0%

**Category: Inventory and Record Keeping Tasks**

TYPE OF TRAINING	UNIT	INSTITUTION
Computer Assisted Training	9.0%	16.5%
Full Motion Simulator	0.0%	0.0%
Obstacle Range	0.0%	0.0%

**Category: Orientation and Map reading Tasks**

TYPE OF TRAINING	UNIT	INSTITUTION
Computer Assisted Training	16.5%	14.2%
Full Motion Simulator	9.3%	6.5%
Obstacle Range	3.5%	0.0%

**Category: Static Vehicle Operations Tasks**

TYPE OF TRAINING	UNIT	INSTITUTION
Computer Assisted Training	7.5%	9.3%
Full Motion Simulator	8.3%	6.5%
Obstacle Range	2.1%	2.5%

**Category: Moving Vehicle Operations Tasks**

TYPE OF TRAINING	UNIT	INSTITUTION
Computer Assisted Training	12.8%	9.6%
Full Motion Simulator	21.8%	15.1%
Obstacle Range	16.9%	1.3%

**Category: Emergency Procedures and Recovery Tasks**

TYPE OF TRAINING	UNIT	INSTITUTION
Computer Assisted Training	12.0%	8.1%
Full Motion Simulator	6.4%	1.9%
Obstacle Range	4.5%	1.9%

**Category: Other Vehicle Tasks**

TYPE OF TRAINING	UNIT	INSTITUTION
Computer Assisted Training	11.6%	6.4%
Full Motion Simulator	13.7%	6.8%
Obstacle Range	5.4%	1.8%

**Category: Training Tasks**

TYPE OF TRAINING	UNIT	INSTITUTION
Computer Assisted Training	8.3%	10.8%
Full Motion Simulator	9.8%	3.3%
Obstacle Range	4.5%	1.7%

**Category: Ammunition Operations Tasks**

TYPE OF TRAINING	UNIT	INSTITUTION
Computer Assisted Training	6.8%	3.8%
Full Motion Simulator	1.5%	1.3%
Obstacle Range	0.8%	0.0%



**Category: Communication PMCS Tasks**

TYPE OF TRAINING	UNIT	INSTITUTION
Computer Assisted Training	18.0%	0.0%
Full Motion Simulator	3.0%	0.0%
Obstacle Range	0.0%	0.0%

**Category: Communications Maintenance, Repair and Troubleshooting Tasks**

TYPE OF TRAINING	UNIT	INSTITUTION
Computer Assisted Training	7.8%	1.0%
Full Motion Simulator	3.0%	1.0%
Obstacle Range	0.6%	0.0%

**Category: Communication Operation Tasks**

TYPE OF TRAINING	UNIT	INSTITUTION
Computer Assisted Training	12.6%	2.5%
Full Motion Simulator	6.0%	3.3%
Obstacle Range	0.0%	0.0%

**Category: Communication Messages Tasks**

TYPE OF TRAINING	UNIT	INSTITUTION
Computer Assisted Training	15.6%	3.9%
Full Motion Simulator	7.5%	2.8%
Obstacle Range	5.6%	0.0%

**Category: Other Communications Tasks**

TYPE OF TRAINING	UNIT	INSTITUTION
Computer Assisted Training	9.6%	6.0%
Full Motion Simulator	0.6%	1.0%
Obstacle Range	2.4%	4.0%

**Category: Gunnery Operations Tasks**

TYPE OF TRAINING	UNIT	INSTITUTION
Computer Assisted Training	11.3%	7.5%
Full Motion Simulator	19.5%	10.0%
Obstacle Range	16.5%	5.0%

**Category: NBC Operations Tasks**

TYPE OF TRAINING	UNIT	INSTITUTION
Computer Assisted Training	10.3%	3.8%
Full Motion Simulator	9.6%	1.6%
Obstacle Range	3.9%	0.9%

**Category: Tactical Operations Tasks**

TYPE OF TRAINING	UNIT	INSTITUTION
Computer Assisted Training	7.3%	6.3%
Full Motion Simulator	13.1%	3.6%
Obstacle Range	20.6%	6.4%

## Category: Bridging Operations Tasks

NOTE: The following tasks are Wolverine specific. The task data used was extracted from Breacher tasks that require the same level of Knowledge and skill, and are performed at the same skill level. The specific tasks are listed under this heading in Appendix B.

Rational: Using Breacher tasks that are the same in nature (mechanical vs mechanical), it is the opinion of the training analyst and subject matter experts the training data will be similar in scope and diversity.

TYPE OF TRAINING	UNIT	INSTITUTION
Computer Assisted Training	13.5%	2.5%
Full Motion Simulator	12.0%	7.5%
Obstacle Range	15.0%	0.0%

## **APPENDIX D.**

### **Training Alternatives**

**TRAINING Alternative 1:** Institutional training using Priority 1 (Must Have) TADSS, and unit SUS/CAT without simulation.

#### **1. TRAINING DEVICE REQUIREMENTS:**

a. Operator Training. This capability will provide realistic visual and audio simulation in proper starting and stopping procedures and replicate launch and retrieve the bridge, and driving the system under varied terrain, weather and combat conditions both day and night.

##### **1) Operate the HAB**

- a) Start/stop the engine
- b) Power up vehicle from the driver control display
- c) Perform engine shut off procedures
- d) Apply immediate action for loss of engine power
- e) Apply immediate action when engine fails to shutdown
- f) Use engine condition displays
- g) Operate the gas particulate system

##### **2) Drive the HAB**

- a) Operate in extreme cold
- b) Operate in extreme heat
- c) Operate extreme dust, sand, and mud
- d) Use proper ground guide technique
- e) Apply immediate action for loss of steering
- f) Apply immediate action for loss of service brakes

- g) Perform ditch crossing operations
- h) Perform wall crossing operations
- i) Perform rail car loading and unloading
- j) Perform heavy equipment truck transporter loading and unloading
- k) Perform aircraft loading and unloading
- l) Perform ship loading and unloading
- m) Cross a bridge (MGB, Ribbon, HAB)
- n) Operate the vehicle on slopes up to 60%
- 3) Launch the bridge (with side slopes of 15 to 20%)
- 4) Retrieve the bridge (with side slopes of 15 to 20%)
- 5) Vision devices
  - a) Operate the night vision devices
  - b) Install the night viewer
  - c) Remove the night viewer
- 6) Operate the fire extinguishing system
- 7) Operate the integral smoke generator
- 8) Operate the NBC backup system
- 9) Operate the NBC overpressure system
- 10) Operate in an NBC environment with NBC sensors inoperative
- 11) Operate the identification (friend or foe) system
- 12) Operate the engineer command and control system
- 13) Operate the position locator system

- 14) Manually update positive navigational information
- 15) Perform vehicle operational training with one crewmen
- 16) Operate the intravehicle information system (IVIS)

b. Maintenance Training. This capability will provide realistic diagnostic and troubleshooting training for operator and organizational level personnel.

- 1) TROUBLESHOOT THE HAB

- a) Troubleshoot the chassis
- b) Troubleshoot the drivers station
- c) Troubleshoot the vehicle with control panel lights
- d) Troubleshoot the engine

c. Command and Control Communications and Automation Training. This capability provides for the networking of systems into interactive maneuver, launch and retrieve simulations. It will also provide realistic programmable computer generated imagery simulation of terrain and opposing forces.

- 1) OPERATE THE SINCGARS RADIO

- a) Maintain communication equipment
- b) Establish and operate single channel voice radio system
- c) Establish/enter a communications net using SINCGARS
- d) Close/leave a communications net
- e) Send/receive radio messages

- 2) USE COMMAND AND CONTROL EQUIPMENT

- a) Access operational status through command and control equipment
- b) Transmit situation reports using command and control equipment

- c) Prepare orders using command and control equipment
- d) Generate orders using command and control equipment
- 3) Select a movement route using a map
- 4) Conduct vehicle tactical navigation
- 5) Respond to advisory/warning message displays
- 6) Operate commanders input device

2. Student load per year.

The estimated load for AIT is 600 students (12 per class opt.), and BNCOC 60 students (12 opt).

3. Class load per year.

The estimated load for AIT is 50 classes per year and BNCOC is estimated at 5 per year.

4. Simulators needed.

Based on each simulator capable of teaching two students five simulators will be required.

5. Estimate the expected change in OPTEMPO requirements either as an estimate of the expected reduction, a percent decrease, or as some range of reduced values.

a. The Institutional training OPTEMPO reduction is derived by using one hour of simulator or simulation will equal one hour of vehicle OPTEMPO.

b. The Basic Non Commissioned Officers Course training OPTEMPO reduction is derived by using one hour of simulator or simulation will equal one hour of vehicle OPTEMPO.

6. The number of HABs required to teach this POI is 6. Class scheduling conflicts will be resolved by the course administrator. The number of vehicles reflects entry level training only and contains no maintenance floats.

7. The training week will consist of five (5) eight (8) hour days except for week three (Field Training Exercise) which will consist of three twenty-four hour days.

**EQUIPMENT USAGE****INSTITUTIONAL TNG**

		MON	TUE	WED	THU	FRI	TOTAL
WEEK 1	CLASS:	3	1	0	1	3	8.0
	VEHICLE:	2	0	0	2	4	8.0
	SIMULATOR:	3	7	8	9	1	28.0
WEEK 2	CLASS:	3	1	1	0	0	5.0
	VEHICLE:	3	4	3	0	0	10.0
	SIMULATOR:	2	3	0	0	0	5.0
FTX	CLASS:	0	0	0	0	0	0.0
	VEHICLE:	8	8	0	0	0	16.0
	SIMULATOR:	0	0	0	0	0	0.0

**TOTAL USAGE**

CLASS:	13.0
VEHICLE:	34.0
SIMULATOR:	33.0

TOTAL HOURS:	52.0
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**BNCOC****MON TUE WED THU FRI TOTAL**

WEEK 1	CLASS:	1	2	0	0	0	3.0
	VEHICLE:	3	2	0	0	0	5.0
	SIMULATOR:	4	4	0	0	0	8.0

**TOTAL USAGE**

CLASS:	3.0
VEHICLE:	5.0
SIMULATOR:	8.0

TOTAL HOURS:	16.0
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9. Combined Arms Training Strategy (CATS): No impact.



HAB INSTITUTIONAL TRAINING WEEK 1, TRAINING ALTERNATIVE 1

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
1	INTRO TO COURSE C	STARTING, DRIVING, & SHUTDOWN PROCED SIM PE1	STARTING, DRIVING, & SHUTDOWN PROCED SIM PE1	NBC SYS OPER C OPER OF NAV SYS C	STARTING, DRIVING, & SHUTDOWN PROCED SIM PE1
2	INTRO TO HAB C	STARTING, DRIVING, & SHUTDOWN PROCED SIM PE1	STARTING, DRIVING, & SHUTDOWN PROCED SIM PE1	NBC SYS OPER SIM PE1	PMCS C
3	INTRO TO HAB VEH PE1	STARTING, DRIVING, & SHUTDOWN PROCED SIM PE1	STARTING, DRIVING, & SHUTDOWN PROCED SIM PE1	OPER OF NAV SYS SIM PE1	PMCS C
4	INTRO TO HAB VEH PE1	LAUNCH & RETRIEVE THE BRIDGE C	LAUNCH & RETRIEVE THE BRIDGE SIM PE1	NBC SYS OPER SIM PE1	PMCS VEH MTR PRK PE1
L	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
5	DRIVING CONTROLS & INDICATORS/STARTING, DRIVING, & SHUTDOWN PROCEDURES SIM DEMO	LAUNCH & RETRIEVE THE BRIDGE SIM PE1	LAUNCH & RETRIEVE THE BRIDGE SIM PE1	OPER OF NAV SYS SIM PE1	PMCS VEH MTR PRK PE1
6	STARTING, DRIVING, & SHUTDOWN PROCED SIM PE1	LAUNCH & RETRIEVE THE BRIDGE SIM PE1	LAUNCH & RETRIEVE THE BRIDGE SIM PE1	STARTING, DRIVING, & SHUTDOWN PROCED SIM PE1	PMCS VEH MTR PRK PE1
7	HAB COMMO & RADIO PROCEDURES C	LAUNCH & RETRIEVE THE BRIDGE SIM PE1	LAUNCH & RETRIEVE THE BRIDGE SIM PE1	STARTING, DRIVING, & SHUTDOWN PROCED SIM PE1	PMCS VEH MTR PRK PE1
8	DRIVING CONTROLS/ INDICATORS COMMO & RADIO SIM PE1	LAUNCH & RETRIEVE THE BRIDGE SIM PE1	LAUNCH & RETRIEVE THE BRIDGE SIM PE1	STARTING, DRIVING, & SHUTDOWN PROCED SIM PE1	OPERATION OF THE INTEGRATED RATION HEATING DEVICE C

HAB UNIT TRAINING WEEK 1 CONTINUED, TRAINING ALTERNATIVE 1

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
D	DINNER	DINNER	DINNER	DINNER	DINNER
9				OPERATE THE HAB USING NIGHT VISION AIDS  SIM DEM/C/PE1	
10				OPERATE THE HAB AT NIGHT  SIM PE1	
11				OPERATE THE HAB AT NIGHT TRAINING AREA VEH PE1	
12				OPERATE THE HAB AT NIGHT TRAINING AREA VEH PE1	

HAB INSTITUTIONAL TRAINING WEEK 2, TRAINING ALTERNATIVE 1

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
1	EMPLOYMENT OF THE CAMOFLAGE SYSTEM VEH PE1	EXAMINATION (WRITTEN) E3	CRITIQUE & EVALUATION C		
2	TROUBLESHOOTING C	EXAMINATION (PERFORMANCE) VEH APPROP AREA E1	CLEAN AND LUBE THE HAB VEH MTR PRK PE1		
3	TROUBLESHOOTING SIM PE1	EXAMINATION (PERFORMANCE) SIM E1	CLEAN AND LUBE THE HAB VEH MTR PRK PE1		
4	TROUBLESHOOTING SIM PE1	EXAMINATION (PERFORMANCE) SIM E1	CLEAN AND LUBE THE HAB VEH MTR PRK PE1		
L	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
5	TROUBLESHOOTING MOTOR PARK VEH PE1	EXAMINATION (PERFORMANCE) SIM PE1			
6	TROUBLESHOOTING VEH MTR PRK PE1	EXAMINATION (PERFORMANCE) VEH APPROP AREA E1			
7	COURSE REVIEW C	EXAMINATION (PERFORMANCE) VEH APPROP AREA E1			
8	COURSE REVIEW C	EXAMINATION (PERFORMANCE) VEH APPROP AREA E1			

# HAB INSTITUTIONAL FIELD TRAINING, TRAINING ALTERNATIVE 1

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
1	FIELD TRAINING EXERCISE TRAINING AREA VEH PE1	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			
2	FIELD TRAINING EXERCISE TRAINING AREA VEH PE1	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			
3	FIELD TRAINING EXERCISE TRAINING AREA VEH PE1	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			
4	FIELD TRAINING EXERCISE TRAINING AREA VEH PE1	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			
L	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
5	FIELD TRAINING EXERCISE TRAINING AREA VEH PE1	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			
6	FIELD TRAINING EXERCISE TRAINING AREA VEH PE1	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			
7	FIELD TRAINING EXERCISE TRAINING AREA VEH PE1	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			
8	FIELD TRAINING EXERCISE TRAINING AREA VEH PE1	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			

# HAB BNCOC, TRAINING ALTERNATIVE 1

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
1	INTRO TO HAB C	OPERATION OF THE NAVIGATION SYSTEM SIM PE1			
2	INTRO TO HAB VEH PE1	TROUBLESHOOTING VEH PE1			
3	DRIVING CONTROLS & INDICATORS SIM PE1	TROUBLESHOOTING SIM PE1			
4	HAB COMMO & RADIO PROCEDURES SIM PE1	TROUBLESHOOTING SIM PE1			
L	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
5	NBC SYSTEMS OPERATIONS VEH PE1	PMCS VEH PE1			
6	NBC SYSTEMS OPERATIONS SIM PE1	EXAMINATION WRITTEN E1			
7	NBC SYSTEMS OPERATIONS SIM PE1	EXAMINATION PERFORMANCE SIM E1			
8	OPERATION OF THE NAVIGATION SYSTEM VEH PE1	CRITIQUE & EVALUATION C			

**TRAINING ALTERNATIVE 2:** Institutional training using Priority 1 & 2 TADSS, and unit SUS/CAT without simulation.

**1. TRAINING DEVICE REQUIREMENTS:**

a. Operator Training. This capability will provide realistic visual and audio simulation in proper starting and stopping procedures and replicate launch and retrieve the bridge, and driving the system under varied terrain, weather and combat conditions both day and night.

**PRIORITY 1:** See Training Alternative 1.

**PRIORITY 2:**

1. Perform maintenance on the hab
  - a. Perform slave starting operations
  - b. Perform PMCS
  - c. Repair tracks on a HAB
2. Operate the integrated ration heating device
3. Maintain an NBC overpressure system
4. Employ the camouflage system
5. Drive the HAB
  - a. Ford a stream
  - b. Use engine control displays
6. Monitor the BUS indicator lights
7. Implement emergency procedures
8. Activate the decision aids
9. Operate smoke grenade projectors
10. Troubleshooting

- a. Troubleshoot the auxiliary systems
- b. Troubleshoot the gas particulate system

2. Student load per year.

The estimated load for AIT is 600 students (12 per class opt.), and BNCOC 60 students (12 opt).

3. Class load per year.

The estimated load for AIT is 50 classes per year and BNCOC is estimated at 5 per year.

4. Simulators needed.

Based on each simulator capable of teaching two students five simulators will be required.

5. Estimate the expected change in OPTEMPO requirements either as an estimate of the expected reduction, a percent decrease, or as some range of reduced values.

- a. Institutional training OPTEMPO reduction is derived by using one hour of simulator or simulation will equal one hour of vehicle OPTEMPO.
- b. The Basic Non Commissioned Officers Course training OPTEMPO reduction is derived by using one hour of simulator or simulation will equal one hour of vehicle OPTEMPO.

6. The number of HABs required to teach this POI is 6. Class scheduling conflicts will be resolved by the course administrator. The number of vehicles reflects entry level training only and contains no maintenance floats.

7. The training week will consist of five (5) eight (8) hour days except for week three (Field Training Exercise) which will consist of three twenty-four hour days.

# EQUIPMENT USAGE

## INSTITUTIONAL TNG      MON TUE WED THU FRI    TOTAL

WEEK 1	CLASS:	3	1	0	1	3	8.0
	VEHICLE:	2	0	0	2	4	8.0
	SIMULATOR:	3	7	8	9	1	28.0

WEEK 2	CLASS:	3	1	1	0	0	5.0
	VEHICLE:	2	4	3	0	0	9.0
	SIMULATOR:	3	3	0	0	0	6.0

FTX	CLASS:	0	0	0	0	0	0.0
	VEHICLE:	8	8	0	0	0	16.0
	SIMULATOR:	0	0	0	0	0	0.0

## TOTAL USAGE

CLASS:	13.0
VEHICLE:	33.0
SIMULATOR:	34.0

TOTAL HOURS:	80.0
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## BNCOC      MON TUE WED THU FRI    TOTAL

WEEK 1	CLASS:	1	2	0	0	0	3.0
	VEHICLE:	3	2	0	0	0	5.0
	SIMULATOR:	4	4	0	0	0	8.0

## TOTAL USAGE

CLASS:	3.0
VEHICLE:	5.0
SIMULATOR:	8.0

TOTAL HOURS:	16.0
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8. Combined Arms Training Strategy (CATS): No impact.



HAB INSTITUTIONAL TRAINING WEEK 1, TRAINING ALTERNATIVE 2

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
1	INTRO TO COURSE C	STARTING, DRIVING, & SHUTDOWN PROCED SIM PE1	STARTING, DRIVING, & SHUTDOWN PROCED SIM PE1	NBC SYS OPER C OPER OF NAV SYS C	STARTING, DRIVING, & SHUTDOWN PROCED SIM PE1
2	INTRO TO HAB C	STARTING, DRIVING, & SHUTDOWN PROCED SIM PE1	STARTING, DRIVING, & SHUTDOWN PROCED SIM PE1	NBC SYS OPER SIM PE1	PMCS C
3	INTRO TO HAB VEH PE1	STARTING, DRIVING, & SHUTDOWN PROCED SIM PE1	STARTING, DRIVING, & SHUTDOWN PROCED SIM PE1	OPER OF NAV SYS SIM PE1	PMCS C
4	INTRO TO HAB VEH PE1	LAUNCH & RETRIEVE THE BRIDGE C	LAUNCH & RETRIEVE THE BRIDGE SIM PE1	NBC SYS OPER SIM PE1	PMCS VEH MTR PRK PE1
L	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
5	DRIVING CONTROLS & INDICATORS/STARTING, DRIVING, & SHUTDOWN PROCEDURES SIM DEMO	LAUNCH & RETRIEVE THE BRIDGE SIM PE1	LAUNCH & RETRIEVE THE BRIDGE SIM PE1	OPER OF NAV SYS SIM PE1	PMCS VEH MTR PRK PE1
6	STARTING, DRIVING, & SHUTDOWN PROCED SIM PE1	LAUNCH & RETRIEVE THE BRIDGE SIM PE1	LAUNCH & RETRIEVE THE BRIDGE SIM PE1	STARTING, DRIVING, & SHUTDOWN PROCED SIM PE1	PMCS VEH MTR PRK PE1
7	HAB COMMO & RADIO PROCEDURES C	LAUNCH & RETRIEVE THE BRIDGE SIM PE1	LAUNCH & RETRIEVE THE BRIDGE SIM PE1	STARTING, DRIVING, & SHUTDOWN PROCED SIM PE1	PMCS VEH MTR PRK PE1
8	DRIVING CONTROLS/ INDICATORS COMMO & RADIO SIM PE1	LAUNCH & RETRIEVE THE BRIDGE SIM PE1	LAUNCH & RETRIEVE THE BRIDGE SIM PE1	STARTING, DRIVING, & SHUTDOWN PROCED SIM PE1	OPERATION OF THE INTEGRATED RATION HEATING DEVICE C

HAB UNIT TRAINING WEEK 1 CONTINUED, TRAINING ALTERNATIVE 2

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
D	DINNER	DINNER	DINNER	DINNER	DINNER
9				OPERATE THE HAB USING NIGHT VISION AIDS  SIM DEM/C/PE1	
10				OPERATE THE HAB AT NIGHT  SIM PE1	
11				OPERATE THE HAB AT NIGHT TRAINING AREA VEH PE1	
12				OPERATE THE HAB AT NIGHT TRAINING AREA VEH PE1	

# HAB INSTITUTIONAL TRAINING WEEK 2, TRAINING ALTERNATIVE 2

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
1	EMPLOYMENT OF THE CAMOFLAGE SYSTEM VEH PE1	EXAMINATION (WRITTEN) E3	CRITIQUE & EVALUATION C		
2	TROUBLESHOOTING C	EXAMINATION (PERFORMANCE) VEH APPROP AREA E1	CLEAN AND LUBE THE HAB VEH MTR PRK PE1		
3	TROUBLESHOOTING SIM PE1	EXAMINATION (PERFORMANCE) SIM E1	CLEAN AND LUBE THE HAB VEH MTR PRK PE1		
4	TROUBLESHOOTING SIM PE1	EXAMINATION (PERFORMANCE) SIM E1	CLEAN AND LUBE THE HAB VEH MTR PRK PE1		
L	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
5	TROUBLESHOOTING SIM PE1	EXAMINATION (PERFORMANCE) SIM PE1			
6	TROUBLESHOOTING VEH MTR PRK PE1	EXAMINATION (PERFORMANCE) VEH APPROP AREA E1			
7	COURSE REVIEW C	EXAMINATION (PERFORMANCE) VEH APPROP AREA E1			
8	COURSE REVIEW C	EXAMINATION (PERFORMANCE) VEH APPROP AREA E1			

HAB INSTITUTIONAL FIELD TRAINING, TRAINING ALTERNATIVE 2

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
1	FIELD TRAINING EXERCISE TRAINING AREA PE1 VEH	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			
2	FIELD TRAINING EXERCISE TRAINING AREA PE1 VEH	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			
3	FIELD TRAINING EXERCISE TRAINING AREA PE1 VEH	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			
4	FIELD TRAINING EXERCISE TRAINING AREA PE1 VEH	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			
L	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
5	FIELD TRAINING EXERCISE TRAINING AREA PE1 VEH	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			
6	FIELD TRAINING EXERCISE TRAINING AREA PE1 VEH	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			
7	FIELD TRAINING EXERCISE TRAINING AREA PE1 VEH	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			
8	FIELD TRAINING EXERCISE TRAINING AREA PE1 VEH	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			

# HAB BNCOC, TRAINING ALTERNATIVE 2

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
1	INTRO TO HAB C	OPERATION OF THE NAVIGATION SYSTEM SIM PE1			
2	INTRO TO HAB VEH PE1	TROUBLESHOOTING VEH PE1			
3	DRIVING CONTROLS & INDICATORS SIM PE1	TROUBLESHOOTING SIM PE1			
4	HAB COMMO & RADIO PROCEDURES SIM PE1	TROUBLESHOOTING SIM PE1			
L	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
5	NBC SYSTEMS OPERATIONS VEH PE1	PMCS VEH PE1			
6	NBC SYSTEMS OPERATIONS SIM PE1	EXAMINATION WRITTEN E1			
7	NBC SYSTEMS OPERATIONS SIM PE1	EXAMINATION PERFORMANCE SIM E1			
8	OPERATION OF THE NAVIGATION SYSTEM VEH PE1	CRITIQUE & EVALUATION C			

**TRAINING ALTERNATIVE 3:** Institutional training using Priority 1, 2 & 3 TADSS, and unit SUS/CAT without simulation.

**1. TRAINING DEVICE REQUIREMENTS:**

a. Operator Training. This capability will provide realistic visual and audio simulation in proper starting and stopping procedures and replicate launch and retrieve the bridge, and driving the system under varied terrain, weather and combat conditions both day and night.

PRIORITY 1: See Training Alternative 1

PRIORITY 2: See Training Alternative 2

PRIORITY 3:

1. Operate the bilge pump
  2. Maintain the singars
    - a. Replace communication equipment cables
    - b. Encode/decode messages
  3. Operate the personnel heater
  4. Implement redundant systems workarounds
  5. Troubleshooting
    - a. Troubleshoot the smoke generator
  6. Analyze terrain
  7. Identify terrain
2. Student load per year.
- The estimated load for AIT is 600 students (12 per class opt.), and BNCOC 60 students (12 opt).
3. Class load per year.

The estimated load for AIT is 50 classes per year and BNCOC is estimated at 5 per year.

4. Simulators needed.

Based on each simulator capable of teaching two students five simulators will be required.

5. Estimate the expected change in OPTEMPO requirements either as an estimate of the expected reduction, a percent decrease, or as some range of reduced values.

a. The Institutional training OPTEMPO reduction is derived by using one hour of simulator or simulation will equal one hour of vehicle OPTEMPO.

b. The Basic Non Commissioned Officers Course training OPTEMPO reduction is derived by using one hour of simulator or simulation will equal one hour of vehicle OPTEMPO.

6. The number of HABs required to teach this POI is 6. Class scheduling conflicts will be resolved by the course administrator. The number of vehicles reflects entry level training only and contains no maintenance floats.

7. The training week will consist of five (5) eight (8) hour days except for week three (Field Training Exercise) which will consist of three twenty-four hour days.

## EQUIPMENT USAGE

### INSTITUTIONAL TNG      MON TUE WED THU FRI    TOTAL

WEEK 1	CLASS:	3	1	0	1	3	8.0
	VEHICLE:	2	0	0	1	4	7.0
	SIMULATOR:	3	7	8	10	1	29.0

WEEK 2	CLASS:	3	1	1	0	0	5.0
	VEHICLE:	2	4	3	0	0	9.0
	SIMULATOR:	3	3	0	0	0	6.0

FTX	CLASS:	0	0	0	0	0	0.0
	VEHICLE:	8	8	0	0	0	16.0
	SIMULATOR:	0	0	0	0	0	0.0

#### TOTAL USAGE

CLASS:	13.0
VEHICLE:	32.0
SIMULATOR:	35.0

TOTAL HOURS:	80.0
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### BNCOC      MON TUE WED THU FRI    TOTAL

WEEK 1	CLASS:	1	2	0	0	0	3.0
	VEHICLE:	3	2	0	0	0	5.0
	SIMULATOR:	4	4	0	0	0	8.0

#### TOTAL USAGE

CLASS:	3.0
VEHICLE:	5.0
SIMULATOR:	8.0

TOTAL HOURS:	16.0
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8. Combined Arms Training Strategy (CATS): No impact.



HAB INSTITUTIONAL TRAINING WEEK 1, TRAINING ALTERNATIVE 3

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
1	INTRO TO COURSE C	STARTING, DRIVING, & SHUTDOWN PROCED SIM PE1	STARTING, DRIVING, & SHUTDOWN PROCED SIM PE1	NBC SYS OPER C OPER OF NAV SYS C	STARTING, DRIVING, & SHUTDOWN PROCED SIM PE1
2	INTRO TO HAB C	STARTING, DRIVING, & SHUTDOWN PROCED SIM PE1	STARTING, DRIVING, & SHUTDOWN PROCED SIM PE1	NBC SYS OPER SIM PE1	PMCS C
3	INTRO TO HAB VEH PE1	STARTING, DRIVING, & SHUTDOWN PROCED SIM PE1	STARTING, DRIVING, & SHUTDOWN PROCED SIM PE1	OPER OF NAV SYS SIM PE1	PMCS C
4	INTRO TO HAB VEH PE1	LAUNCH & RETRIEVE THE BRIDGE C	LAUNCH & RETRIEVE THE BRIDGE SIM PE1	NBC SYS OPER SIM PE1	PMCS VEH MTR PRK PE1
L	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
5	DRIVING CONTROLS & INDICATORS/STARTING, DRIVING, & SHUTDOWN PROCEDURES SIM DEMO	LAUNCH & RETRIEVE THE BRIDGE SIM PE1	LAUNCH & RETRIEVE THE BRIDGE SIM PE1	OPER OF NAV SYS SIM PE1	PMCS VEH MTR PRK PE1
6	STARTING, DRIVING, & SHUTDOWN PROCED SIM PE1	LAUNCH & RETRIEVE THE BRIDGE SIM PE1	LAUNCH & RETRIEVE THE BRIDGE SIM PE1	STARTING, DRIVING, & SHUTDOWN PROCED SIM PE1	PMCS VEH MTR PRK PE1
7	HAB COMMO & RADIO PROCEDURES C	LAUNCH & RETRIEVE THE BRIDGE SIM PE1	LAUNCH & RETRIEVE THE BRIDGE SIM PE1	STARTING, DRIVING, & SHUTDOWN PROCED SIM PE1	PMCS VEH MTR PRK PE1
8	DRIVING CONTROLS/ INDICATORS COMMO & RADIO SIM PE1	LAUNCH & RETRIEVE THE BRIDGE SIM PE1	LAUNCH & RETRIEVE THE BRIDGE SIM PE1	STARTING, DRIVING, & SHUTDOWN PROCED SIM PE1	OPERATION OF THE INTEGRATED RATION HEATING DEVICE C

HAB UNIT TRAINING WEEK 1 CONTINUED, TRAINING ALTERNATIVE 3

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
D	DINNER	DINNER	DINNER	DINNER	DINNER
9				OPERATE THE HAB USING NIGHT VISION AIDS  SIM DEM/C/PE1	
10				OPERATE THE HAB AT NIGHT  SIM PE1	
11				OPERATE THE HAB AT NIGHT  SIM PE1	
12				OPERATE THE HAB AT NIGHT TRAINING AREA VEH PE1	

## HAB INSTITUTIONAL TRAINING WEEK 2, TRAINING ALTERNATIVE 3

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
1	EMPLOYMENT OF THE CAMOFLAGE SYSTEM VEH PE1	EXAMINATION (WRITTEN) E3	CRITIQUE & EVALUATION C		
2	TROUBLESHOOTING C	EXAMINATION (PERFORMANCE) VEH APPROP AREA E1	CLEAN AND LUBE THE HAB VEH MTR PRK PE1		
3	TROUBLESHOOTING SIM PE1	EXAMINATION (PERFORMANCE) SIM E1	CLEAN AND LUBE THE HAB VEH MTR PRK PE1		
4	TROUBLESHOOTING SIM PE1	EXAMINATION (PERFORMANCE) SIM E1	CLEAN AND LUBE THE HAB VEH MTR PRK PE1		
L	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
5	TROUBLESHOOTING SIM PE1	EXAMINATION (PERFORMANCE) SIM PE1			
6	TROUBLESHOOTING VEH MTR PRK PE1	EXAMINATION (PERFORMANCE) VEH APPROP AREA E1			
7	COURSE REVIEW C	EXAMINATION (PERFORMANCE) VEH APPROP AREA E1			
8	COURSE REVIEW C	EXAMINATION (PERFORMANCE) VEH APPROP AREA E1			

# HAB INSTITUTIONAL FIELD TRAINING, TRAINING ALTERNATIVE 3

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
1	FIELD TRAINING EXERCISE TRAINING AREA VEH PE1	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			
2	FIELD TRAINING EXERCISE TRAINING AREA VEH PE1	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			
3	FIELD TRAINING EXERCISE TRAINING AREA VEH PE1	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			
4	FIELD TRAINING EXERCISE TRAINING AREA VEH PE1	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			
L	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
5	FIELD TRAINING EXERCISE TRAINING AREA VEH PE1	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			
6	FIELD TRAINING EXERCISE TRAINING AREA VEH PE1	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			
7	FIELD TRAINING EXERCISE TRAINING AREA VEH PE1	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			
8	FIELD TRAINING EXERCISE TRAINING AREA VEH PE1	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			

# HAB BNCOC, TRAINING ALTERNATIVE 3

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
1	INTRO TO HAB C	OPERATION OF THE NAVAGATION SYSTEM SIM PE1			
2	INTRO TO HAB VEH PE1	TROUBLESHOOTING VEH PE1			
3	DRIVING CONTROLS & INDICATORS SIM PE1	TROUBLESHOOTING SIM PE1			
4	HAB COMMO & RADIO PROCEDURES SIM PE1	TROUBLESHOOTING SIM PE1			
L	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
5	NBC SYSTEMS OPERATIONS VEH PE1	PMCS VEH PE1			
6	NBC SYSTEMS OPERATIONS SIM PE1	EXAMINATION WRITTEN E1			
7	NBC SYSTEMS OPERATIONS SIM PE1	EXAMINATION PERFORMANCE SIM E1			
8	OPERATION OF THE NAVAGATION SYSTEM VEH PE1	CRITIQUE & EVALUATION C			

**TRAINING ALTERNATIVE 4:** Institutional training and unit sustainment without simulators or simulation.

1. TRAINING DEVICE REQUIREMENT: NONE

2. Identify tasks to be trained at the Institution and to what level.

a. Introduction

1) Introduction to the vehicle

b. Vehicle controls and operation

1) Operate the HAB

- a) Start/stop the engine
- b) Power up vehicle from the driver control display
- c) Perform engine shut off procedures
- d) Apply immediate action for loss of engine power
- e) Apply immediate action when engine fails to shutdown
- f) Use engine condition displays
- g) Operate the gas particulate system
- h) Operate the fire extinguishing system
- i) Operate the integral smoke generator
- j) Operate the identification (friend or foe) system
- k) Implement redundant systems workarounds

2) Vehicle command and control/communications and radio procedures

- a) Operate the SINCGARS radio
- b) Maintain communication equipment

- c) Establish and operate single channel voice radio system
- d) Establish/enter a communications net using SINCGARS
- e) Close/leave a communications net
- f) Send/receive radio messages
- g) Replace communication equipment cables
- h) Encode/decode messages
- i) Access operational status through command and control equipment
- j) Transmit situation reports using command and control equipment
- k) Prepare orders using command and control equipment
- l) Generate orders using command and control equipment
- m) Respond to advisory/warning message displays
- n) Operate commanders input device
- o) Operate the engineer command and control system

### 3) Drive the HAB

- a) Operate in extreme cold
- b) Operate in extreme heat
- c) Operate extreme dust, sand, and mud
- d) Use proper ground guide technique
- e) Apply immediate action for loss of steering
- f) Apply immediate action for loss of service brakes
- g) Perform ditch crossing operations

- h) Perform wall crossing operations
  - i) Perform rail car loading and unloading
  - j) Perform heavy equipment truck transporter loading and unloading
  - k) Perform aircraft loading and unloading
  - l) Perform ship loading and unloading
  - m) Cross a bridge (MGB, RIBBON, HAB)
  - n) Operate the vehicle on slopes up to 60%
  - o) Ford a stream
  - p) Use engine control displays
  - q) Perform vehicle operational training with one crewmen
  - r) Operate the integrated ration heating device
  - s) Monitor the BUS indicator lights
  - t) Implement emergency procedures
  - u) Activate the decision aids
  - v) Operate smoke grenade projectors
  - w) Operate the bilge pump
  - x) Operate the personnel heater
- 4) Operation of the navigational system
- a) Operate the position locator system
  - b) Manually update positive navigational information
  - c) Conduct vehicle tactical navigation
  - d) Select a movement route using a map



- e) Analyze terrain
  - f) Identify terrain
- 5) Operation of the NBC systems
  - a) Operate the NBC backup system
  - b) Operate the NBC overpressure system
  - c) Operate in an NBC environment with NBC sensors inoperative
  - d) Maintain an NBC overpressure system
- 6) Operation of vision devices
  - a) Operate the night vision devices
  - b) Install the night viewer
  - c) Remove the night viewer
- 7) Operation of the Intravehicle Information System (IVIS)
  - a) Operate the Intravehicle Information System (IVIS)
- c. Bridging
  - 1) Launch and retrieval operations
    - a) Launch the bridge (with side slopes of 15 to 20%)
    - b) Retrieve the bridge (with side slopes of 15 to 20%)
- d. Vehicle concealment
  - 1) Camouflage
    - a) Employ the camouflage system
- e. Vehicle maintenance
  - 1) Operator troubleshooting

- a) Troubleshoot the HAB
  - b) Troubleshoot the chassis
  - c) Troubleshoot the drivers station
  - d) Troubleshoot the vehicle with control panel lights
  - e) Troubleshoot the engine
  - f) Troubleshoot the auxiliary systems
  - g) Troubleshoot the gas particulate system
  - h) Troubleshoot the smoke generator
- 2) Preventative maintenance
- a) Perform slave starting operations
  - b) Perform PMCS
  - c) Repair tracks on a HAB
- 3) Removal and installation of crew replaceable components
- Tasks not developed contractor training estimate used.
- 4) Vehicle cleaning and lubrication
- Tasks not developed contractor training estimate used.
- f. Review, examination, and critique
- 1) Review
  - 2) Written and performance examinations
  - 3) Critique and evaluation
3. Determine the blocks of instruction (poi subcourses).
- a. Introduction

- 1) Introduction to the course
- 2) Introduction to the vehicle
  - a) HAB safety concerns and considerations
  - b) Identification of vehicle primary parts
  - c) General terms and capabilities
- b. Vehicle controls and operation
  - 1) Operate the HAB
  - 2) Vehicle communications and radio procedures
  - 3) Drive the HAB
  - 4) Operation of the navigational system
  - 5) Operation of the NBC systems
  - 6) Operation of the vision devices
  - 7) Operation of the Intravehicle Information System (IVIS)
- c. Bridging
  - 1) Launch and retrieval operations
- d. Vehicle concealment
  - 1) Camouflage
- e. Vehicle maintenance
  - 1) Operator troubleshooting
  - 2) Preventative maintenance
  - 3) Removal and installation of crew replaceable components
  - 4) Vehicle cleaning and lubrication

f. Review, examination, and critique

1) Review

2) Written and performance examinations

3) Critique and evaluation

4. Determine the student load per year.

The estimated load for AIT is 600 students (12 per class opt.), and BNCOC 60 students (12 opt).

5. Determine the class load per year.

The estimated load for AIT is 50 classes per year.

6. Estimate the expected change in OPTEMPO requirements either as an estimate of the expected reduction, a percent decrease, or as some range of reduced values.

There is no OPTEMPO reduction for this POI.

7. The number of HABs required to teach this POI is 12. Class scheduling conflicts will be resolved by the course administrator. The number of vehicles reflects entry level training only and contains no maintenance floats.

## EQUIPMENT USAGE

### INSTITUTIONAL TNG

		MON	TUE	WED	THU	FRI	SAT	TOTAL
WEEK 1	CLASS:	3	1	0	1	3	0	8.0
	VEHICLE:	5	7	8	11	5	0	36.0
	SIMULATOR:	0	0	0	0	0	0	0.0

### MON TUE WED THU FRI SAT TOTAL

WEEK 2	CLASS:	3	1	1	0	0	0	5.0
	VEHICLE:	5	7	3	0	0	0	15.0
	SIMULATOR:	0	0	0	0	0	0	0.0

### MON TUE WED THU FRI SAT TOTAL

FTX	CLASS:	0	0	0	0	0	0	0.0
	VEHICLE:	8	8	0	0	0	0	16.0
	SIMULATOR:	0	0	0	0	0	0	0.0

### TOTAL USAGE

CLASS:	13.0
VEHICLE:	67.0
SIMULATOR:	0.0

TOTAL HOURS:	80.0
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### BNCOC

		MON	TUE	WED	THU	FRI	TOTAL
WEEK 1	CLASS:	1	2	0	0	0	3.0
	VEHICLE:	7	6	0	0	0	13.0
	SIMULATOR:	0	0	0	0	0	0.0

### TOTAL USAGE

CLASS:	3.0
VEHICLE:	13.0
SIMULATOR:	0.0

TOTAL HOURS:	16.0
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8. Combined Arms Training Strategy (CATS): No impact.

HAB INSTITUTIONAL TRAINING WEEK 1, TRAINING ALTERNATIVE 4

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
1	INTRO TO COURSE C	STARTING, DRIVING, & SHUTDOWN PROCED VEH TRAINING AREA PE1	STARTING, DRIVING, & SHUTDOWN PROCED VEH TRAINING AREA PE1	NBC SYS OPER C OPER OF NAV SYS C	STARTING, DRIVING, & SHUTDOWN PROCED TRAINING AREA VEH PE1
2	INTRO TO HAB C	STARTING, DRIVING, & SHUTDOWN PROCED VEH TRAINING AREA PE1	STARTING, DRIVING, & SHUTDOWN PROCED VEH TRAINING AREA PE1	NBC SYS OPER TRAINING AREA VEH PE1	PMCS C
3	INTRO TO HAB VEH PE1	STARTING, DRIVING, & SHUTDOWN PROCED VEH TRAINING AREA PE1	STARTING, DRIVING, & SHUTDOWN PROCED VEH TRAINING AREA PE1	OPER OF NAV SYS TRAINING AREA VEH PE1	PMCS C
4	INTRO TO HAB VEH PE1	LAUNCH & RETRIEVE THE BRIDGE C	LAUNCH & RETRIEVE THE BRIDGE VEH TRAINING AREA PE1	NBC SYS OPER TRAINING AREA VEH PE1	PMCS VEH MTR PRK PE1
L	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
5	DRIVING CONTROLS & INDICATORS/STARTING, DRIVING, & SHUTDOWN PROCEDURES VEH MOTOR PARK DEMO	LAUNCH & RETRIEVE THE BRIDGE VEH TRAINING AREA PE1	LAUNCH & RETRIEVE THE BRIDGE VEH TRAINING AREA PE1	OPER OF NAV SYS TRAINING AREA VEH PE1	PMCS VEH MTR PRK PE1
6	STARTING, DRIVING, & SHUTDOWN PROCED VEH MOTOR PARK PE1	LAUNCH & RETRIEVE THE BRIDGE VEH TRAINING AREA PE1	LAUNCH & RETRIEVE THE BRIDGE VEH TRAINING AREA PE1	STARTING, DRIVING, & SHUTDOWN PROCED TRAINING AREA VEH PE1	PMCS VEH MTR PRK PE1
7	HAB COMMO & RADIO PROCEDURES C	LAUNCH & RETRIEVE THE BRIDGE VEH TRAINING AREA PE1	LAUNCH & RETRIEVE THE BRIDGE VEH TRAINING AREA PE1	STARTING, DRIVING, & SHUTDOWN PROCED VEH TRAINING AREA PE1	PMCS VEH MTR PRK PE1
8	DRIVING CONTROLS/ INDICATORS COMMO & RADIO VEH MOTOR PARK PE1	LAUNCH & RETRIEVE THE BRIDGE VEH TRAINING AREA PE1	LAUNCH & RETRIEVE THE BRIDGE VEH TRAINING AREA PE1	STARTING, DRIVING, & SHUTDOWN PROCED VEH TRAINING AREA PE1	OPERATION OF THE INTEGRATED RATION HEATING DEVICE C

HAB UNIT TRAINING WEEK 1 CONTINUED, TRAINING ALTERNATIVE 4

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
D	DINNER	DINNER	DINNER	DINNER	DINNER
9				OPERATE THE HAB USING NIGHT VISION AIDS TRAINING AREA VEH DEM/C/PE1	
10				OPERATE THE HAB AT NIGHT TRAINING AREA VEH PE1	
11				OPERATE THE HAB AT NIGHT TRAINING AREA VEH PE1	
12				OPERATE THE HAB AT NIGHT TRAINING AREA VEH PE1	

HAB INSTITUTIONAL TRAINING WEEK 2, TRAINING ALTERNATIVE 4

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
1	EMPLOYMENT OF THE CAMOFLAGE SYSTEM VEH PE1	EXAMINATION (WRITTEN) E3	CRITIQUE & EVALUATION C		
2	TROUBLESHOOTING C	EXAMINATION (PERFORMANCE) VEH APPROP AREA E1	CLEAN AND LUBE THE HAB VEH MTR PRK PE1		
3	TROUBLESHOOTING MOTOR PARK VEH PE1	EXAMINATION (PERFORMANCE) VEH TRAINING AREA E1	CLEAN AND LUBE THE HAB VEH MTR PRK PE1		
4	TROUBLESHOOTING MOTOR PARK VEH PE1	EXAMINATION (PERFORMANCE) VEH TRAINING AREA E1	CLEAN AND LUBE THE HAB VEH MTR PRK PE1		
L	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
5	TROUBLESHOOTING MOTOR PARK VEH PE1	EXAMINATION (PERFORMANCE) VEH TRAINING AREA E1			
6	TROUBLESHOOTING MOTOR PARK VEH PE1	EXAMINATION (PERFORMANCE) VEH APPROP AREA E1			
7	COURSE REVIEW C	EXAMINATION (PERFORMANCE) VEH APPROP AREA E1			
8	COURSE REVIEW C	EXAMINATION (PERFORMANCE) VEH APPROP AREA E1			



HAB INSTITUTIONAL FIELD TRAINING, TRAINING ALTERNATIVE 4

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
1	FIELD TRAINING EXERCISE TRAINING AREA VEH PE1	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			
2	FIELD TRAINING EXERCISE TRAINING AREA VEH PE1	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			
3	FIELD TRAINING EXERCISE TRAINING AREA VEH PE1	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			
4	FIELD TRAINING EXERCISE TRAINING AREA VEH PE1	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			
L	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
5	FIELD TRAINING EXERCISE TRAINING AREA VEH PE1	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			
6	FIELD TRAINING EXERCISE TRAINING AREA VEH PE1	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			
7	FIELD TRAINING EXERCISE TRAINING AREA VEH PE1	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			
8	FIELD TRAINING EXERCISE TRAINING AREA VEH PE1	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			

# HAB BNCOC, TRAINING ALTERNATIVE 4

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
1	INTRO TO HAB C	OPERATION OF THE NAVIGATION SYSTEM VEH TRAINING AREA PE1			
2	INTRO TO HAB VEH MOTOR PARK PE1	TROUBLESHOOTING VEH MOTOR PARK PE1			
3	DRIVING CONTROLS & INDICATORS VEH MOTOR PARK PE1	TROUBLESHOOTING VEH MOTOR PARK PE1			
4	HAB COMMO & RADIO PROCEDURES VEH MOTOR PRK PE1	TROUBLESHOOTING VEH MOTOR PARK PE1			
L	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
5	NBC SYSTEMS OPERATIONS VEH PE1	PMCS VEH PE1			
6	NBC SYSTEMS OPERATIONS VEH PE1	EXAMINATION WRITTEN E1			
7	NBC SYSTEMS OPERATIONS VEH PE1	EXAMINATION PERFORMANCE VEH MOTOR PARK E1			
8	OPERATION OF THE NAVIGATION SYSTEM VEH TRAINING AREA PE1	CRITIQUE & EVALUATION C			

**TRAINING ALTERNATIVE 5:** Limited institutional familiarization, unit training and sustainment without simulators or simulation.

1. Institutional HAB initial training will be 7 hours and consist of an overview covering major safety concerns, considerations, identification of vehicle primary parts, general terms, capabilities, and a demonstration.

2. Unit HAB initial training will be 80 hours and address all operational and maintenance tasks required to employ the HAB. This initial training is in addition to the normal Combined Arms Training Alternative (CATS). The following must be taught to all HAB crewmembers. This will insure the crews are qualified in the safe operation of the system. All tasks will be taught to standard.

a. Introduction

1) Introduction to the vehicle

b. Vehicle controls and operation

1) Operate the HAB

- a) Start/stop the engine
- b) Power up vehicle from the driver control display
- c) Perform engine shut off procedures
- d) Apply immediate action for loss of engine power
- e) Apply immediate action when engine fails to shutdown
- f) Use engine condition displays
- g) Operate the gas particulate system
- h) Operate the fire extinguishing system
- i) Operate the integral smoke generator
- j) Operate the identification (friend or foe) system
- k) Implement redundant systems workarounds

2) Vehicle command and control/communications and radio

procedures

- a) Operate the SINCGARS radio
  - b) Maintain communication equipment
  - c) Establish and operate single channel voice radio system
  - d) Establish/enter a communications net using SINCGARS
  - e) Close/leave a communications net
  - f) Send/receive radio messages
  - g) Replace communication equipment cables
  - h) Encode/decode messages
  - i) Access operational status through command and control equipment
  - j) Transmit situation reports using command and control equipment
  - k) Prepare orders using command and control equipment
  - l) Generate orders using command and control equipment
  - m) Respond to advisory/warning message displays
  - n) Operate commanders input device
  - o) Operate the engineer command and control system
- 3) Drive the HAB
- a) Operate in extreme cold
  - b) Operate in extreme heat
  - c) Operate extreme dust, sand, and mud
  - d) Use proper ground guide technique

- e) Apply immediate action for loss of steering
  - f) Apply immediate action for loss of service brakes
  - g) Perform ditch crossing operations
  - h) Perform wall crossing operations
  - i) Perform rail car loading and unloading
  - j) Perform heavy equipment truck transporter loading and unloading
  - k) Perform aircraft loading and unloading
  - l) Perform ship loading and unloading
  - m) Cross a bridge (MGB, RIBBON, HAB)
  - n) Operate the vehicle on slopes up to 60%
  - o) Ford a stream
  - p) Use engine control displays
  - q) Perform vehicle operational training with one crewmen
  - r) Operate the integrated ration heating device
  - s) Monitor the BUS indicator lights
  - t) Implement emergency procedures
  - u) Activate the decision aids
  - v) Operate smoke grenade projectors
  - w) Operate the bilge pump
  - x) Operate the personnel heater
- 4) Operation of the navigational system
- a) Operate the position locator system

- b) Manually update positive navigational information
  - c) Conduct vehicle tactical navigation
  - d) Select a movement route using a map
  - e) Analyze terrain
  - f) Identify terrain
- 5) Operation of the NBC systems
  - a) Operate the NBC backup system
  - b) Operate the NBC overpressure system
  - c) Operate in an NBC environment with NBC sensors inoperative
  - d) Maintain an NBC overpressure system
- 6) Operation of vision devices
  - a) Operate the night vision devices
  - b) Install the night viewer
  - c) Remove the night viewer
- 7) Operation of the Intravehicle Information System (IVIS)
  - a) Operate the Intravehicle Information System (IVIS)
- c. Bridging
  - 1) Launch and retrieval operations
    - a) Launch the bridge (with side slopes of 15 to 20%)
    - b) Retrieve the bridge (with side slopes of 15 to 20%)
- d. Vehicle concealment
  - 1) Camouflage

- a) Employ the camouflage system

- e. Vehicle maintenance

- 1) Operator troubleshooting

- a) Troubleshoot the HAB
    - b) Troubleshoot the chassis
    - c) Troubleshoot the drivers station
    - d) Troubleshoot the vehicle with control panel lights
    - e) Troubleshoot the engine
    - f) Troubleshoot the auxiliary systems
    - g) Troubleshoot the gas particulate system
    - h) Troubleshoot the smoke generator

- 2) Preventative maintenance

- a) Perform slave starting operations
    - b) Perform PMCS
    - c) Repair tracks on a HAB

- 3) Removal and installation of crew replaceable components

- Tasks not developed contractor training estimate used.

- 4) Vehicle cleaning and lubrication

- Tasks not developed contractor training estimate used.

- f. Review, examination, and critique

- 1) Review

- 2) Written and performance examinations
  - 3) Critique and evaluation
3. Determine the blocks of instruction (POI Subcourses).
- a. Introduction
    - 1) Introduction to the course
    - 2) Introduction to the vehicle
      - a) HAB safety concerns and considerations
      - b) Identification of vehicle primary parts
      - c) General terms and capabilities
  - b. Vehicle controls and operation
    - 1) Operate the HAB
    - 2) Vehicle communications and radio procedures
    - 3) Drive the HAB
    - 4) Operation of the navigational system
    - 5) Operation of the NBC systems
    - 6) Operation of the vision devices
    - 7) Operation of the Intravehicle Information System (IVIS)
  - c. Bridging
    - 1) Launch and retrieval operations
  - d. Vehicle concealment
    - 1) Camouflage



e. Vehicle maintenance

- 1) Operator troubleshooting
- 2) Preventative maintenance
- 3) Removal and installation of crew replaceable components
- 4) Vehicle cleaning and lubrication

f. Review, examination, and critique

- 1) Review
- 2) Written and performance examinations
- 3) Critique and evaluation

3. The student load per year.

The estimated load for AIT is 600 students (12 per class opt.), and BNCOC 60 students (12 opt).

4. The class load per year.

The estimated load for AIT is 50 classes per year.

5. The expected change in OPTEMPO requirements either as an estimate of the expected reduction, a percent decrease, or as some range of reduced values.

There is no OPTEMPO reduction for this POI.

6. The number of HABs required to teach the institutional training POI is 2 vehicles.

7. It is estimated that 50% of the fielded HABs will be used to instruct the Initial Unit Training plan four times per year. This training is in addition to the normal annual Combined Arms Training (CAT) the unit is required to accomplish.

## EQUIPMENT USAGE

INSTITUTIONAL TNG	MON	TUE	WED	THU	FRI	TOTAL
WEEK 1 CLASS	2	0	0	0	0	2.0
VEHICLE	5	0	0	0	0	5.0
TOTAL USAGE						
CLASS:	2.0					
VEHICLE:	5.0					
SIMULATOR:	0.0					

TOTAL HOURS: 7.0

BNCOC	MON	TUE	WED	THU	FRI	TOTAL
WEEK 1 CLASS	8	0	0	0	0	8.0
VEHICLE	0	0	0	0	0	0.0
TOTAL USAGE						
CLASS:	8.0					
VEHICLE:	0.0					
SIMULATOR:	0.0					

TOTAL HOURS: 8.0

INITIAL UNIT TNG	MON	TUE	WED	THU	FRI	TOTAL
WEEK 1 CLASS:	3	1	0	1	3	8.0
VEHICLE:	5	7	8	11	5	36.0
SIMULATOR:	0	0	0	0	0	0.0
WEEK 2 CLASS:	3	1	1	0	0	5.0
VEHICLE:	5	7	3	0	0	15.0
SIMULATOR:	0	0	0	0	0	0.0
FTX CLASS:	0	0	0	0	0	0.0
VEHICLE:	8	8	0	0	0	16.0
SIMULATOR:	0	0	0	0	0	0.0
TOTAL USAGE						
CLASS:	13.0					
VEHICLE:	67.0					
SIMULATOR:	0.0					
TOTAL UNIT HOURS:	80.0					

# HAB INSTITUTIONAL TRAINING, TRAINING ALTERNATIVE 5

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
1	INTRODUCTION TO THE COURSE C				
2	INTRODUCTION TO THE HAB C				
3	VEHICLE OVERVIEW MOTOR PARK VEH DEM/C				
4	BRIDGE LAUNCHING OPERATIONS TRAINING AREA VEH DEM/C				
L	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
5	BRIDGE LAUNCHING OPERATIONS TRAINING AREA VEH DEM/C				
6	MAINTENANCE PMCS MOTOR PARK VEH DEM/C				
7	PMCS MOTOR PARK VEH DEM/C				
8					

# HAB BNCOC, TRAINING ALTERNATIVE 4

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
1	INTRO TO HAB C				
2	INTRO TO HAB C				
3	DRIVING CONTROLS & INDICATORS C				
4	HAB COMMO & RADIO PROCEDURES C				
L	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
5	NBC SYSTEMS OPERATIONS C				
6	NBC SYSTEMS OPERATIONS C				
7	NBC SYSTEMS OPERATIONS C				
8	OPERATION OF THE NAVIGATION SYSTEM C				

HAB UNIT TRAINING WEEK 1, TRAINING ALTERNATIVE 5

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
1	INTRO TO COURSE C	STARTING, DRIVING, & SHUTDOWN PROCED VEH TRAINING AREA PE1	STARTING, DRIVING, & SHUTDOWN PROCED VEH TRAINING AREA PE1	NBC SYS OPER C OPER OF NAV SYS C	STARTING, DRIVING, & SHUTDOWN PROCED TRAINING AREA VEH PE1
2	INTRO TO HAB C	STARTING, DRIVING, & SHUTDOWN PROCED VEH TRAINING AREA PE1	STARTING, DRIVING, & SHUTDOWN PROCED VEH TRAINING AREA PE1	NBC SYS OPER VEH TRAINING AREA PE1	PMCS C
3	INTRO TO HAB VEH PE1	STARTING, DRIVING, & SHUTDOWN PROCED VEH TRAINING AREA PE1	STARTING, DRIVING, & SHUTDOWN PROCED VEH TRAINING AREA PE1	OPER OF NAV SYS VEH TRAINING AREA PE1	PMCS C
4	INTRO TO HAB VEH PE1	LAUNCH & RETRIEVE THE BRIDGE C	LAUNCH & RETRIEVE THE BRIDGE VEH TRAINING AREA PE1	NBC SYS OPER VEH TRAINING AREA PE1	PMCS VEH MTR PRK PE1
L	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
5	DRIVING CONTROLS & INDICATORS/STARTING, DRIVING, & SHUTDOWN PROCEDURES VEH MOTOR PARK DEMO	LAUNCH & RETRIEVE THE BRIDGE VEH TRAINING AREA PE1	LAUNCH & RETRIEVE THE BRIDGE VEH TRAINING AREA PE1	OPER OF NAV SYS VEH TRAINING AREA PE1	PMCS VEH MTR PRK PE1
6	STARTING, DRIVING, & SHUTDOWN PROCED VEH MOTOR PARK PE1	LAUNCH & RETRIEVE THE BRIDGE VEH TRAINING AREA PE1	LAUNCH & RETRIEVE THE BRIDGE VEH TRAINING AREA PE1	STARTING, DRIVING, & SHUTDOWN PROCED TRAINING AREA VEH PE1	PMCS VEH MTR PRK PE1
7	HAB COMMO & RADIO PROCEDURES C	LAUNCH & RETRIEVE THE BRIDGE VEH TRAINING AREA PE1	LAUNCH & RETRIEVE THE BRIDGE VEH TRAINING AREA PE1	STARTING, DRIVING, & SHUTDOWN PROCED VEH TRAINING AREA PE1	PMCS VEH MTR PRK PE1
8	DRIVING CONTROLS/ INDICATORS COMMO & RADIO VEH MOTOR PARK PE1	LAUNCH & RETRIEVE THE BRIDGE VEH TRAINING AREA PE1	LAUNCH & RETRIEVE THE BRIDGE VEH TRAINING AREA PE1	STARTING, DRIVING, & SHUTDOWN PROCED VEH TRAINING AREA PE1	OPERATION OF THE INTEGRATED RATION HEATING DEVICE C

# HAB UNIT TRAINING WEEK 1 CONTINUED, TRAINING ALTERNATIVE 5

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
D	DINNER	DINNER	DINNER	DINNER	DINNER
9				OPERATE THE HAB USING NIGHT VISION AIDS TRAINING AREA VEH DEM/C/PE1	
10				OPERATE THE HAB AT NIGHT TRAINING AREA VEH PE1	
11				OPERATE THE HAB AT NIGHT TRAINING AREA VEH PE1	
12				OPERATE THE HAB AT NIGHT TRAINING AREA VEH PE1	

## HAB UNIT TRAINING WEEK 2, TRAINING ALTERNATIVE 4

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
1	EMPLOYMENT OF THE CAMOFLAGE SYSTEM VEH PE1	EXAMINATION (WRITTEN) E3	CRITIQUE & EVALUATION C		
2	TROUBLESHOOTING C	EXAMINATION (PERFORMANCE) VEH APPROP AREA E1	CLEAN AND LUBE THE HAB VEH MTR PRK PE1		
3	TROUBLESHOOTING MOTOR PARK VEH PE1	EXAMINATION (PERFORMANCE) VEH TRAINING AREA E1	CLEAN AND LUBE THE HAB VEH MTR PRK PE1		
4	TROUBLESHOOTING MOTOR PARK VEH PE1	EXAMINATION (PERFORMANCE) VEH TRAINING AREA E1	CLEAN AND LUBE THE HAB VEH MTR PRK PE1		
L	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
5	TROUBLESHOOTING MOTOR PARK VEH PE1	EXAMINATION (PERFORMANCE) VEH TRAINING AREA PE1			
6	TROUBLESHOOTING MOTOR PARK VEH PE1	EXAMINATION (PERFORMANCE) VEH APPROP AREA E1			
7	COURSE REVIEW C	EXAMINATION (PERFORMANCE) VEH APPROP AREA E1			
8	COURSE REVIEW C	EXAMINATION (PERFORMANCE) VEH APPROP AREA E1			

HAB UNIT FIELD TRAINING, TRAINING ALTERNATIVE 4

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
1	FIELD TRAINING EXERCISE TRAINING AREA VEH PE1	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			
2	FIELD TRAINING EXERCISE TRAINING AREA VEH PE1	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			
3	FIELD TRAINING EXERCISE TRAINING AREA VEH PE1	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			
4	FIELD TRAINING EXERCISE TRAINING AREA VEH PE1	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			
L	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
5	FIELD TRAINING EXERCISE TRAINING AREA VEH PE1	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			
6	FIELD TRAINING EXERCISE TRAINING AREA VEH PE1	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			
7	FIELD TRAINING EXERCISE TRAINING AREA VEH PE1	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			
8	FIELD TRAINING EXERCISE TRAINING AREA VEH PE1	RECOVERY OPERATIONS (PMCS AND CLEANING OF EQUIPMENT) VEH MOTOR POOL PE1			



## APPENDIX E. ANALYSIS WORKSHEETS

**Entry Data:** The following table contains the spreadsheet computations values, all costs are listed in FY96C dollars.

VEH MI PER TNG HR:	15
NO OF CLS PER YR:	
ENTRY LEVEL:	50
BNCOC:	5
NO VEH OP HRS PER CLS:	
Alt 1: INST:	25
BNCOC:	1
Alt 2: INST:	23
BNCOC:	1
Alt 3: INST:	22
BNCOC:	1
Alt 4: INST:	46
BNCOC:	6
Alt 5: INST:	1
UNIT:	51
BNCOC:	0
COST PER MI:	\$144.92
VEHICLE PURCHASE PRICE:	\$4,231,200

## Data Computation Spreadsheets:

### OPTEMPO Miles per Year:

	INST TRNG	UNIT TRNG	CATS
Alt 1:	112,590		68,000
Alt 2:	103,590		68,000
Alt 3:	99,090		68,000
Alt 4:	415,080		63,920
Alt 5:	1,500	159,120	70,720

### Training Alternative Cost Comparasion: (costs are in Millions, and FY96C \$):

	INST	UNIT	TOTAL
ALT 1:	\$419.4	\$217.0	\$636.4
ALT 2:	\$391.7	\$217.0	\$608.7
ALT 3:	\$378.4	\$217.0	\$595.4
ALT 4:	\$1,387.9	\$171.5	\$1,559.4
ALT 5:	\$13.8	\$745.5	\$759.3

### Cumlitive Institutional Cost Comparasion: (Total Cost in Millions, and FY96C \$)

	SIMULATOR	VEHICLES	VEH OPERATON	TOTAL COST
ALT 1:	\$33,870,017	\$25,387,200	\$360,108,229	\$419.4
ALT 2:	\$34,919,475	\$25,387,200	\$331,414,346	\$391.7
ALT 3:	\$35,944,799	\$25,387,200	\$317,067,405	\$378.4
ALT 4:		\$50,774,400	\$1,337,134,938	\$1,387.9
ALT 5:		\$8,462,400	\$5,380,129	\$13.8

**Cumlitive Unit Cost:** (Total Cost in Millions, and FY96C \$)

	CATS	INITIAL TRNG	TOTAL COST
ALT 1:	\$9,854,465		\$9.9
ALT 2:	\$9,854,465		\$9.9
ALT 3:	\$9,854,465		\$9.9
ALT 4:	\$9,263,197		\$9.3
ALT 5:	\$10,248,643	\$5,199,679	\$15.4

**Simulator cost Breakout Speradsheets:** Pages, E-4 through E-6 contain copies of the LOTUS Spreadsheets for the three prioritized simulator confugurations. All costs are in FY96C \$.

**Training Alternative Cost Breakout Spreadsheets:** Pages, E-7 through E-11 contain copies of the LOTUS Spreadsheets for the five training alternatives. All costs are in FY96C \$.

SIMULATOR COST BREAKOUT PRIORITY 1 (FY96C \$)

YEAR	DELIVER	DEVELOP	PRODUCE	MCA	FIELDING	HW MAINT	SW MAINT	OPERATE	SUSTAIN	ANNUAL	CUM ANNUAL COST
96		\$278,610								\$278,610	\$278,610
97		\$586,014								\$586,014	\$864,624
98		\$3,845,168		\$3,709,802						\$7,554,970	\$8,419,595
99	1		\$2,538,156		\$979,863	\$36,556	\$102,787	\$65,213	\$204,556	\$3,722,575	\$12,142,170
00	2		\$4,846,287			\$109,668	\$89,082	\$195,639	\$394,388	\$5,240,675	\$17,382,846
01	2		\$4,759,223			\$182,780	\$78,803	\$326,064	\$587,647	\$5,346,870	\$22,729,716
02						\$182,780	\$68,524	\$326,064	\$577,369	\$577,369	\$23,307,085
03						\$182,780	\$68,524	\$326,064	\$577,369	\$577,369	\$23,884,453
04						\$182,780	\$68,524	\$326,064	\$577,369	\$577,369	\$24,461,822
05						\$182,780	\$68,524	\$326,064	\$577,369	\$577,369	\$25,039,191
06						\$182,780	\$68,524	\$326,064	\$577,369	\$577,369	\$25,616,560
07						\$182,780	\$68,524	\$326,064	\$577,369	\$577,369	\$26,193,929
08						\$182,780	\$68,524	\$326,064	\$577,369	\$577,369	\$26,771,297
09						\$182,780	\$68,524	\$326,064	\$577,369	\$577,369	\$27,348,666
10						\$182,780	\$68,524	\$326,064	\$577,369	\$577,369	\$27,926,035
11						\$182,780	\$68,524	\$326,064	\$577,369	\$577,369	\$28,503,404
12						\$182,780	\$68,524	\$326,064	\$577,369	\$577,369	\$29,080,773
13						\$182,780	\$68,524	\$326,064	\$577,369	\$577,369	\$29,658,142
14						\$182,780	\$68,524	\$326,064	\$577,369	\$577,369	\$30,235,510
15						\$182,780	\$68,524	\$326,064	\$577,369	\$577,369	\$30,812,879
16						\$182,780	\$68,524	\$326,064	\$577,369	\$577,369	\$31,390,248
17						\$182,780	\$68,524	\$326,064	\$577,369	\$577,369	\$31,967,617
18						\$182,780	\$68,524	\$326,064	\$577,369	\$577,369	\$32,544,986
19						\$182,780	\$68,524	\$326,064	\$577,369	\$577,369	\$33,122,354
20						\$146,224	\$68,524	\$260,852	\$475,600	\$475,600	\$33,597,954
21						\$73,113	\$68,524	\$130,426	\$272,062	\$272,062	\$33,870,017
TOTAL:	5	\$4.7	\$12.1	\$3.7	\$1.0	\$3.8	\$1.6	\$6.8	\$12.3	\$33.9	\$33.9
YEAR	DELIVER	DEVELOP	PRODUCE	MCA	FIELDING	HW MAINT	SW MAINT	OPERATE	SUSTAIN	ANNUAL	CUM ANNUAL COST

SIMULATOR COST BREAKOUT PRIORITY 1+2 (FY96C \$)											
YEAR	DELIVER	DEVELOP	PRODUCE	MCA	FIELDING	HW MAINT	SW MAINT	OPERATE	SUSTAIN	ANNUAL	CUM ANNUAL COST
96		\$295,159								\$295,159	\$295,159
97		\$677,572								\$677,572	\$972,731
98		\$4,280,315		\$3,709,802						\$7,990,117	\$8,962,848
99	1		\$2,538,156		\$979,863	\$36,556	\$121,803	\$67,142	\$225,501	\$3,743,521	\$12,706,369
00	2		\$4,846,287			\$109,668	\$105,562	\$201,427	\$416,657	\$5,262,944	\$17,969,313
01	2		\$4,759,223			\$182,780	\$93,382	\$335,711	\$611,873	\$5,371,096	\$23,340,409
02						\$182,780	\$81,201	\$335,711	\$599,693	\$599,693	\$23,940,102
03						\$182,780	\$81,201	\$335,711	\$599,693	\$599,693	\$24,539,795
04						\$182,780	\$81,201	\$335,711	\$599,693	\$599,693	\$25,139,488
05						\$182,780	\$81,201	\$335,711	\$599,693	\$599,693	\$25,739,181
06						\$182,780	\$81,201	\$335,711	\$599,693	\$599,693	\$26,338,874
07						\$182,780	\$81,201	\$335,711	\$599,693	\$599,693	\$26,938,567
08						\$182,780	\$81,201	\$335,711	\$599,693	\$599,693	\$27,538,260
09						\$182,780	\$81,201	\$335,711	\$599,693	\$599,693	\$28,137,953
10						\$182,780	\$81,201	\$335,711	\$599,693	\$599,693	\$28,737,645
11						\$182,780	\$81,201	\$335,711	\$599,693	\$599,693	\$29,337,338
12						\$182,780	\$81,201	\$335,711	\$599,693	\$599,693	\$29,937,031
13						\$182,780	\$81,201	\$335,711	\$599,693	\$599,693	\$30,536,724
14						\$182,780	\$81,201	\$335,711	\$599,693	\$599,693	\$31,136,417
15						\$182,780	\$81,201	\$335,711	\$599,693	\$599,693	\$31,736,110
16						\$182,780	\$81,201	\$335,711	\$599,693	\$599,693	\$32,335,803
17						\$182,780	\$81,201	\$335,711	\$599,693	\$599,693	\$32,935,496
18						\$182,780	\$81,201	\$335,711	\$599,693	\$599,693	\$33,535,189
19						\$182,780	\$81,201	\$335,711	\$599,693	\$599,693	\$34,134,882
20						\$146,224	\$81,201	\$268,569	\$495,994	\$495,994	\$34,630,877
21						\$73,113	\$81,201	\$134,285	\$288,598	\$288,598	\$34,919,475
TOTAL:	5	\$5.3	\$12.1	\$3.7	\$1.0	\$3.8	\$1.9	\$7.0	\$12.8	\$34.9	\$34.9
YEAR	DELIVER	DEVELOP	PRODUCE	MCA	FIELDING	HW MAINT	SW MAINT	OPERATE	SUSTAIN	ANNUAL	CUM ANNUAL COST

SIMULATOR COST BREAKOUT PRIORITY 1+2+3 (FY96C \$)

YEAR	DELIVER	DEVELOP	PRODUCE	MCA	FIELDING	HW MAINT	SW MAINT	OPERATE	SUSTAIN	ANNUAL	CUM ANNUAL COST
96		\$311,154								\$311,154	\$311,154
97		\$743,752								\$743,752	\$1,054,906
98		\$4,782,147		\$3,709,802						\$8,491,949	\$9,546,855
99	1		\$2,538,156		\$979,863	\$36,556	\$135,941	\$69,072	\$241,569	\$3,759,588	\$13,306,444
00	2		\$4,846,287			\$109,668	\$117,816	\$207,215	\$434,699	\$5,280,986	\$18,587,430
01	2		\$4,759,223			\$182,780	\$104,222	\$345,358	\$632,361	\$5,391,583	\$23,979,013
02						\$182,780	\$91,276	\$345,358	\$619,415	\$619,415	\$24,598,428
03						\$182,780	\$91,276	\$345,358	\$619,415	\$619,415	\$25,217,843
04						\$182,780	\$91,276	\$345,358	\$619,415	\$619,415	\$25,837,258
05						\$182,780	\$91,276	\$345,358	\$619,415	\$619,415	\$26,456,673
06						\$182,780	\$91,276	\$345,358	\$619,415	\$619,415	\$27,076,087
07						\$182,780	\$91,276	\$345,358	\$619,415	\$619,415	\$27,695,502
08						\$182,780	\$91,276	\$345,358	\$619,415	\$619,415	\$28,314,917
09						\$182,780	\$91,276	\$345,358	\$619,415	\$619,415	\$28,934,332
10						\$182,780	\$91,276	\$345,358	\$619,415	\$619,415	\$29,553,746
11						\$182,780	\$91,276	\$345,358	\$619,415	\$619,415	\$30,173,161
12						\$182,780	\$91,276	\$345,358	\$619,415	\$619,415	\$30,792,576
13						\$182,780	\$91,276	\$345,358	\$619,415	\$619,415	\$31,411,991
14						\$182,780	\$91,276	\$345,358	\$619,415	\$619,415	\$32,031,406
15						\$182,780	\$91,276	\$345,358	\$619,415	\$619,415	\$32,650,820
16						\$182,780	\$91,276	\$345,358	\$619,415	\$619,415	\$33,270,235
17						\$182,780	\$91,276	\$345,358	\$619,415	\$619,415	\$33,889,650
18						\$182,780	\$91,276	\$345,358	\$619,415	\$619,415	\$34,509,065
19						\$182,780	\$91,276	\$345,358	\$619,415	\$619,415	\$35,128,479
20						\$146,224	\$91,276	\$276,287	\$513,787	\$513,787	\$35,642,266
21						\$73,113	\$91,276	\$138,143	\$302,532	\$302,532	\$35,944,799
TOTAL:	5	\$5.8	\$12.1	\$3.7	\$1.0	\$3.8	\$2.2	\$7.3	\$13.3	\$35.9	\$35.9
YEAR	DELIVER	DEVELOP	PRODUCE	MCA	FIELDING	HW MAINT	SW MAINT	OPERATE	SUSTAIN	ANNUAL	CUM ANNUAL COST

TRAINING STRATEGY 1 COST SUMMARY (FY96C \$)

(Cost in Millions)

FY	SIMULATOR	INSTITUTIONAL TRAINING			UNIT TRAINING			TOTAL CUM	
		SIM CUM COST	TRAINING	INST COST	TRAINING	CATS	UNIT COST	COST	COST
1996	\$0.3	\$0.3		\$0.3			\$0.0	\$0.0	\$0.3
1997	\$0.6	\$0.9		\$0.9			\$0.0	\$0.0	\$0.9
1998	\$7.6	\$8.4		\$8.4			\$0.0	\$0.0	\$8.4
1999	\$3.7	\$12.1	\$13.9	\$26.1	\$3.4	\$3.4	\$10.1	\$29.4	\$60.7
2000	\$5.2	\$17.4	\$19.4	\$50.7	\$6.7	\$6.7	\$19.9	\$100.8	\$127.6
2001	\$5.3	\$22.7	\$24.8	\$80.9	\$9.9	\$9.9	\$29.8	\$154.4	\$234.8
2002	\$0.6	\$23.3	\$16.4	\$97.8	\$9.9	\$9.9	\$79.0	\$288.4	\$315.2
2003	\$0.6	\$23.9	\$16.4	\$114.7	\$9.9	\$9.9	\$108.6	\$342.0	\$368.8
2004	\$0.6	\$24.5	\$16.4	\$131.7	\$9.9	\$9.9	\$118.5	\$395.6	\$422.4
2005	\$0.6	\$25.0	\$16.4	\$148.6	\$9.9	\$9.9	\$148.0	\$449.2	\$476.0
2006	\$0.6	\$25.6	\$16.4	\$165.6	\$9.9	\$9.9	\$157.9	\$502.8	\$529.6
2007	\$0.6	\$26.2	\$16.4	\$182.5	\$9.9	\$9.9	\$177.6	\$556.4	\$583.2
2008	\$0.6	\$26.8	\$16.4	\$199.5	\$9.9	\$9.9	\$207.1	\$609.9	\$636.4
2009	\$0.6	\$27.3	\$16.4	\$216.4	\$9.9	\$9.9	\$217.0	\$636.4	\$636.4
2010	\$0.6	\$27.9	\$16.4	\$233.4	\$9.9	\$9.9	\$217.0	\$636.4	\$636.4
2011	\$0.6	\$28.5	\$16.4	\$250.3	\$9.9	\$9.9	\$217.0	\$636.4	\$636.4
2012	\$0.6	\$29.1	\$16.4	\$267.3	\$9.9	\$9.9	\$217.0	\$636.4	\$636.4
2013	\$0.6	\$29.7	\$16.4	\$284.2	\$9.9	\$9.9	\$217.0	\$636.4	\$636.4
2014	\$0.6	\$30.2	\$16.4	\$301.2	\$9.9	\$9.9	\$217.0	\$636.4	\$636.4
2015	\$0.6	\$30.8	\$16.4	\$318.1	\$9.9	\$9.9	\$217.0	\$636.4	\$636.4
2016	\$0.6	\$31.4	\$16.4	\$335.0	\$9.9	\$9.9	\$217.0	\$636.4	\$636.4
2017	\$0.6	\$32.0	\$16.4	\$352.0	\$9.9	\$9.9	\$217.0	\$636.4	\$636.4
2018	\$0.6	\$32.5	\$16.4	\$368.9	\$9.9	\$9.9	\$217.0	\$636.4	\$636.4
2019	\$0.6	\$33.1	\$16.4	\$385.9	\$9.9	\$9.9	\$217.0	\$636.4	\$636.4
2020	\$0.5	\$33.6	\$16.4	\$402.7	\$9.9	\$9.9	\$217.0	\$636.4	\$636.4
2021	\$0.3	\$33.9	\$16.4	\$419.4	\$9.9	\$9.9	\$217.0	\$636.4	\$636.4
TOTALS:	\$33.9	\$33.9	\$385.5	\$419.4	\$419.4	\$217.0	\$217.0	\$636.4	\$636.4
	SIMULATORS	CUM SIM COST	TRAINING	TOTAL INST COST		CATS	UNIT COST	LCCE FOR TRNG	

TRAINING STRATEGY 2 COST SUMMARY (FY96C \$)

(Cost in Millions)

FY	SIMULATOR	INSTITUTIONAL TRAINING			UNIT TRAINING			TOTAL CUM	
		SIM CUM COST	TRAINING	INST COST	TRAINING	CATS	UNIT COST	COST	
1996	\$0.3	\$0.3		\$0.3			\$0.0	\$0.3	
1997	\$0.7	\$1.0		\$1.0			\$0.0	\$1.0	
1998	\$8.0	\$9.0		\$9.0			\$0.0	\$9.0	
1999	\$3.7	\$12.7	\$13.5	\$26.2		\$3.4	\$3.4	\$29.5	
2000	\$5.3	\$18.0	\$18.5	\$50.0		\$6.7	\$10.1	\$60.0	
2001	\$5.4	\$23.3	\$23.5	\$78.9		\$9.9	\$19.9	\$98.8	
2002	\$0.6	\$23.9	\$15.1	\$94.5		\$9.9	\$29.8	\$124.3	
2003	\$0.6	\$24.5	\$15.1	\$110.2		\$9.9	\$39.6	\$149.8	
2004	\$0.6	\$25.1	\$15.1	\$125.8		\$9.9	\$49.5	\$175.3	
2005	\$0.6	\$25.7	\$15.1	\$141.5		\$9.9	\$59.3	\$200.8	
2006	\$0.6	\$26.3	\$15.1	\$157.2		\$9.9	\$69.2	\$226.4	
2007	\$0.6	\$26.9	\$15.1	\$172.8		\$9.9	\$79.0	\$251.9	
2008	\$0.6	\$27.5	\$15.1	\$188.5		\$9.9	\$88.9	\$277.4	
2009	\$0.6	\$28.1	\$15.1	\$204.2		\$9.9	\$98.7	\$302.9	
2010	\$0.6	\$28.7	\$15.1	\$219.8		\$9.9	\$108.6	\$328.4	
2011	\$0.6	\$29.3	\$15.1	\$235.5		\$9.9	\$118.5	\$353.9	
2012	\$0.6	\$29.9	\$15.1	\$251.2		\$9.9	\$128.3	\$379.5	
2013	\$0.6	\$30.5	\$15.1	\$266.8		\$9.9	\$138.2	\$405.0	
2014	\$0.6	\$31.1	\$15.1	\$282.5		\$9.9	\$148.0	\$430.5	
2015	\$0.6	\$31.7	\$15.1	\$298.2		\$9.9	\$157.9	\$456.0	
2016	\$0.6	\$32.3	\$15.1	\$313.8		\$9.9	\$167.7	\$481.5	
2017	\$0.6	\$32.9	\$15.1	\$329.5		\$9.9	\$177.6	\$507.1	
2018	\$0.6	\$33.5	\$15.1	\$345.1		\$9.9	\$187.4	\$532.6	
2019	\$0.6	\$34.1	\$15.1	\$360.8		\$9.9	\$197.3	\$558.1	
2020	\$0.5	\$34.6	\$15.1	\$376.4		\$9.9	\$207.1	\$583.5	
2021	\$0.3	\$34.9	\$15.1	\$391.7		\$9.9	\$217.0	\$608.7	
TOTALS:	\$34.9	\$34.9	\$356.8	\$391.7		\$217.0	\$217.0	\$608.7	
	SIMULATORS	CUM SIM COST	TRAINING	TOTAL INST COST		CATS	UNIT COST	LCCE FOR TRNG	





**TRAINING ALTERNATIVE 4 COST SUMMARY (FY96C \$)**

(cost in millions)

FY	SIMULATOR ANNUAL COST	INST TRAINING		UNIT TRAININGTOT CUM			TOTAL CUM	
		SIM CUM COST	TRAINING	INST COST	TRAINING	CATS	UNIT COST	COST
1996		\$0.0		\$0.0			\$0.0	\$0.0
1997		\$0.0		\$0.0			\$0.0	\$0.0
1998		\$0.0		\$0.0			\$0.0	\$0.0
1999		\$0.0	\$37.2	\$37.2		\$2.7	\$2.7	\$39.8
2000		\$0.0	\$57.4	\$94.6		\$5.3	\$8.0	\$102.6
2001		\$0.0	\$77.7	\$172.3		\$9.3	\$17.2	\$189.6
2002		\$0.0	\$60.8	\$233.1		\$9.3	\$26.5	\$259.6
2003		\$0.0	\$60.8	\$293.9		\$9.3	\$35.8	\$329.7
2004		\$0.0	\$60.8	\$354.7		\$9.3	\$45.0	\$399.7
2005		\$0.0	\$60.8	\$415.4		\$9.3	\$54.3	\$469.7
2006		\$0.0	\$60.8	\$476.2		\$9.3	\$63.6	\$539.8
2007		\$0.0	\$60.8	\$537.0		\$9.3	\$72.8	\$609.8
2008		\$0.0	\$60.8	\$597.8		\$9.3	\$82.1	\$679.9
2009		\$0.0	\$60.8	\$658.6		\$9.3	\$91.4	\$749.9
2010		\$0.0	\$60.8	\$719.3		\$9.3	\$100.6	\$820.0
2011		\$0.0	\$60.8	\$780.1		\$9.3	\$109.9	\$890.0
2012		\$0.0	\$60.8	\$840.9		\$9.3	\$119.1	\$960.0
2013		\$0.0	\$60.8	\$901.7		\$9.3	\$128.4	\$1,030.1
2014		\$0.0	\$60.8	\$962.5		\$9.3	\$137.7	\$1,100.1
2015		\$0.0	\$60.8	\$1,023.2		\$9.3	\$146.9	\$1,170.2
2016		\$0.0	\$60.8	\$1,084.0		\$9.3	\$156.2	\$1,240.2
2017		\$0.0	\$60.8	\$1,144.8		\$9.3	\$165.5	\$1,310.3
2018		\$0.0	\$60.8	\$1,205.6		\$9.3	\$174.7	\$1,380.3
2019		\$0.0	\$60.8	\$1,266.4		\$9.3	\$184.0	\$1,450.3
2020		\$0.0	\$60.8	\$1,327.1		\$9.3	\$193.2	\$1,520.4
2021		\$0.0	\$60.8	\$1,387.9		\$9.3	\$202.5	\$1,590.4
TOTALS:	\$0.0	\$0.0	\$1,387.9	\$1,387.9		\$202.5	\$202.5	\$1,590.4
	SIMULATORS	CUM SIM COST	TRAINING	TOTAL INST COST		CATS	UNIT COST	LCCE FOR TRNG

# TRAINING ALTERNATIVE 5 COST SUMMARY (FY96C \$)

(Cost in Millions)

FY	SIMULATOR	INSTITUTIONAL TRAINING			UNIT TRAINING			TOTAL CUM
		SIM CUM COST	TRAINING	INST COST	TRAINING	CATS	UNIT COST	
	ANNUAL COST							COST
1996		\$0.0		\$0.0			\$0.0	\$0.0
1997		\$0.0		\$0.0			\$0.0	\$0.0
1998		\$0.0		\$0.0			\$0.0	\$0.0
1999		\$0.0	\$4.6	\$4.6	\$7.5	\$3.6	\$11.2	\$15.8
2000		\$0.0	\$4.7	\$9.3	\$15.1	\$7.3	\$33.6	\$42.8
2001		\$0.0	\$0.2	\$9.5	\$23.1	\$10.8	\$67.5	\$77.0
2002		\$0.0	\$0.2	\$9.7	\$23.1	\$10.8	\$101.4	\$111.1
2003		\$0.0	\$0.2	\$9.9	\$23.1	\$10.8	\$135.3	\$145.2
2004		\$0.0	\$0.2	\$10.1	\$23.1	\$10.8	\$169.2	\$179.3
2005		\$0.0	\$0.2	\$10.4	\$23.1	\$10.8	\$203.1	\$213.4
2006		\$0.0	\$0.2	\$10.6	\$23.1	\$10.8	\$237.0	\$247.5
2007		\$0.0	\$0.2	\$10.8	\$23.1	\$10.8	\$270.9	\$281.7
2008		\$0.0	\$0.2	\$11.0	\$23.1	\$10.8	\$304.8	\$315.8
2009		\$0.0	\$0.2	\$11.2	\$23.1	\$10.8	\$338.7	\$349.9
2010		\$0.0	\$0.2	\$11.5	\$23.1	\$10.8	\$372.6	\$384.0
2011		\$0.0	\$0.2	\$11.7	\$23.1	\$10.8	\$406.5	\$418.1
2012		\$0.0	\$0.2	\$11.9	\$23.1	\$10.8	\$440.4	\$452.3
2013		\$0.0	\$0.2	\$12.1	\$23.1	\$10.8	\$474.3	\$486.4
2014		\$0.0	\$0.2	\$12.3	\$23.1	\$10.8	\$508.2	\$520.5
2015		\$0.0	\$0.2	\$12.5	\$23.1	\$10.8	\$542.1	\$554.6
2016		\$0.0	\$0.2	\$12.8	\$23.1	\$10.8	\$576.0	\$588.7
2017		\$0.0	\$0.2	\$13.0	\$23.1	\$10.8	\$609.9	\$622.8
2018		\$0.0	\$0.2	\$13.2	\$23.1	\$10.8	\$643.8	\$657.0
2019		\$0.0	\$0.2	\$13.4	\$23.1	\$10.8	\$677.7	\$691.1
2020		\$0.0	\$0.2	\$13.6	\$23.1	\$10.8	\$711.6	\$725.2
2021		\$0.0	\$0.2	\$13.8	\$23.1	\$10.8	\$745.5	\$759.3
TOTALS:	\$0.0	\$0.0	\$13.8	\$13.8	\$506.9	\$238.6	\$745.5	\$759.3
	SIMULATORS	CUM SIM COST	TRAINING	INST COST	UNIT TNG	CATS	UNIT COST	LCCE FOR TRNG